



CLACKAMAS COUNTY TRANSIT DEVELOPMENT PLAN



BACKGROUND INFORMATION & EXISTING CONDITIONS

May 22, 2020





CLACKAMAS COUNTY

TRANSIT DEVELOPMENT PLAN

Date	May 22, 2020
To	Karen Buehrig, Brett Setterfield, Teresa Christopherson, Ellen Rogalin, & Kristina Babcock, Clackamas County Hector Rodriguez-Ruiz, Oregon Department of Transportation
From	Susan Wright, Krista Purser, Paul Ryus, and Russ Doubleday, Kittelsohn & Associates, Inc.
Project	Clackamas County Transit Development Plan
Subject	Background Information and Existing Conditions Memorandum (Subtask 2.5)



BACKGROUND INFORMATION AND EXISTING CONDITIONS

The purpose of this memorandum is to document the baseline transit service; anticipated changes to demographics, land use, and transit service; and the existing policy framework. This information will help guide development of the Clackamas County Transit Development Plan (TDP).

This memorandum inventories Clackamas County's existing transit system; population, employment, and land use; past outreach findings; goals, policies and evaluation criteria; and planned service improvements. The information was obtained and assembled from data sources provided by Clackamas County, transit providers serving the county, U.S. Census, and the Oregon Department of Transportation (ODOT). The majority of the inventory and analysis results are presented in figures and tabular form with supplemental text provided as needed.

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Project Purpose

The intent of the Clackamas County Transit Development Plan (TDP) is to guide future transit investments and communicate a connected and coordinated vision for transit service and access to transit within Clackamas County. In particular, the TDP will:

- Guide investments of Statewide Transportation Improvement Fund (STIF) grants by identifying needed and priority connections in portions of the county currently lacking transit service, and
- Identify other actions needed to support transit usage throughout the County.

TDP work will be focused in two areas:

- Within the Clackamas County portion of the TriMet service area, the TDP will provide detailed analysis and transit level-of-service information, to inform future STIF plans and TriMet service implementation. (Transit planning for areas of the county with other existing service providers (e.g., Wilsonville, Canby, Molalla, Sandy) is addressed in those providers' TDPs, which are reviewed in the Background Information and Existing Conditions Memorandum.)
- In unincorporated areas located between existing service providers and with no current transit service provider, the TDP will recommend how transit service providers can cover these areas in the future and how existing transit services across the county can be better connected.

Executive Summary

The **Transit Service and System Overview** section provides information on existing transit services and how that service helps people move around the county. The section examines connectivity between cities and destinations in the county on transit and travel times on transit. It explores current service levels for transit-supportive areas, where urban and rural populations in the county are served by transit and how underrepresented populations can use transit. Key findings include:

System Connectivity

- Areas east of 172nd Ave in Happy Valley, Damascus and Boring are not connected to transit.
- Downtown Portland is accessible with one transfer or less from nearly all locations in Clackamas County that are connected to transit; however, travel times from places outside the TriMet district are more likely to reach 90 minutes or more.
- The SE Park Avenue MAX Station, the southern terminus of the MAX Orange Line, is broadly accessible by frequent service bus and rail lines. However, only residents in Oregon City, Gladstone or Milwaukie can reach this station without transferring.
- Clackamas Town Center is reachable in two transfers or less from every incorporated community in northern Clackamas County. While many locations in Multnomah County can reach Clackamas Town Center on light rail, very few communities in Clackamas County can use light rail to get here.
- A majority of incorporated communities in the county can reach Oregon City by transit in less than an hour with one or no transfers. Wilsonville is notably not directly connected to Oregon City or West Linn.
- Gresham, a major regional jobs destination for Clackamas County residents, is challenging to reach by transit from Clackamas County, with two transfers required to travel between Happy Valley and Gresham. Within Clackamas County, only Sandy residents are able to reach Gresham in less than 30 minutes and without a transfer.
- There is one TriMet route that runs along OR 212 in the Clackamas Industrial Area.
- Intercity routes outside of the Portland metropolitan Urban Growth Boundary include Wilsonville-Canby, Canby-Oregon City, Canby-Molalla, Molalla-Oregon City, Sandy-Gresham, and Sandy-Estacada. East-west connections are limited in rural Clackamas County.

System Accessibility

- Transit ridership has followed nationwide and statewide trends, peaking near 2014 with a slight decline since.
- By headway and service span level of service (LOS), 84% of all transit routes in the county are at LOS D or better for headway and 63% of all transit routes in the county are at LOS D or better for service span.
- Approximately 53-54% of transit-supportive areas (TSAs) are currently served by transit, with about the same area served in 2040, assuming no change to service. This indicates growth areas are primarily near existing transit services, but that additional service could connect currently unserved TSAs.
- Clackamas County serves less of their population and jobs within ¼ mile of transit stops compared to Washington County and Multnomah County. However, Clackamas county serves a similar

amount of its urban population to Washington County, and a much higher amount of its rural population compared to both Washington County and Multnomah county.

- Clackamas County's population within ¼ mile of transit stops reflect a lower percent of youth and elderly than those ages 18-64, a higher percent of people with a disability than those without, higher percentages of communities of color than white communities, higher percentages of language spoken at home being not English than language spoken at home being English, and higher percentages of households below the poverty line compared to households above the poverty line.

Financial Overview

- The two transit agencies that primarily operate within the Portland metropolitan area, TriMet and SMART, have the highest cost per hour at around \$145 per hour.
- SAM and SCTD, two smaller transit agencies with both city and inter-city service, have operating costs around \$70 per hour.
- CAT, with one inter-city route and demand-response service for the general public, fell in-between these two groups at around \$120 per hour.
- Though higher cost, TriMet provides the lowest cost per ride due to its high ridership. CAT has the highest cost per ride.

The **Existing and Future Population, Employment and Land Use** section provides information on demographics, jobs and employment trends, land use patterns and projected uses, and travel demand findings. Future population growth, employment trends, and projected land used help understand future transit needs. Key findings include:

Demographics

- The County has grown 18.2% from 2000 to 2017, while the selected cities have seen significantly greater growth.
- Happy Valley's 300% growth over this time period is attributable to new housing construction and newly incorporated land toward Damascus.
- Cities outside the Portland metropolitan UGB have also been growing fast, with Molalla and Sandy recording nearly 60% and 100% population growth, respectively, between 2000 and 2017.
- In 2017 the population of Clackamas County was estimated to be 399,962 people. The TriMet service area within Clackamas County contains 282,575 people, or 70.7% of the county population.
- Both Clackamas County as a whole and the TriMet service area within Clackamas County contain a slightly higher percentage of White people and a lower percentage of other races and ethnicities than the state of Oregon as a whole. In Clackamas County, 8.4% of residents identify as Hispanic/Latino and 4.1% identify as Asian.
- Within both the TriMet service area within Clackamas County and the county as a whole, approximately 88% of people speak only English, which is slightly higher than the state of Oregon's 84.8%. Of the 12.5% of the population who speak a language other than English, approximately 4.3% speak English less than very well, meaning they have limited English proficiency.
- In 2017 the median household income was \$80,033 in the TriMet service area within Clackamas County and \$72,408 in Clackamas County as a whole, both of which were higher than the Oregon median income of \$56,119. However, 9% of people in Clackamas County and 8.6% of people in the TriMet service area within Clackamas County earned at or below the Federal Poverty Level of \$24,600 for a family of four (2017 levels).

- The TriMet service area within Clackamas County and Clackamas County contain equivalent average percentages of people 65 years and older, at 16.5%. These percentages are similar to, but slightly higher than, the statewide percentage of 16.4%.
- People living with all types of disabilities make up 14.6% of Oregon's population. Disabilities measured in this statistic include vision, hearing, cognitive, ambulatory, self-care, and independent living difficulties. In the TriMet service area within Clackamas County, 32,900 people live with a disability, or 11.7% of the population. In Clackamas County as a whole, 47,004 people live with a disability, or 11.8% of the population.

Jobs and Employment

- Portland is the most common destination for employed county residents.
- Portland is also the most common home location for employees working in Clackamas County.
- Four of the top 10 locations for employed county residents are cities in Washington County.
- Just over half of all employed Clackamas County residents and employees in Clackamas County commute 10 miles or less to reach work.

Land Use and Travel Demand

- Land use growth is anticipated near Wilsonville/Stafford, Oregon City, and Damascus/Boring.
- Increases to transit service and improved coordination can help to reduce travel times and make transit a competitive option for transportation, especially for, Damascus–Gresham and Happy Valley–Gresham.

The **Outreach Findings** section summarizes public engagement findings for each transit agency in Clackamas County from prior planning efforts. Key findings include:

- In Canby, more than half all survey respondents would prefer that CAT invest in transit service to other cities over implementing a local circulator route. CAT also found that additional service to Oregon City was popular. Adding service to Woodburn differed based on language: about 15% of English speakers identified this option as a priority, while about 50% of Spanish speakers did so.
- In Sandy, respondents at stakeholder meetings and in surveys generally supported additional regional service for SAM. When looking at potential transit improvements, respondents supported additional weekend service to Gresham and a new route to Clackamas Town Center.
- In Molalla, several potential new services for SCTD were identified (Woodburn, Silverton, Estacada, commuter service, on-demand shuttle service). Of these options, direct service to Woodburn was the highest priority from existing riders. Commuter service to employment areas was the highest priority for non-riders.
- In Wilsonville, workshop and survey respondents were more likely to support an increased focus on inter-city bus service.

Transit Service and System Overview

Transit services are provided in Clackamas County differently than in any other county in Oregon. There are seven service providers that allow people to travel within rural cities, and between rural cities and the urban area, and there is even transit service up to Timberline Lodge on Mt Hood. The transit systems, which include the routes served by each of these providers, the bus stops, transit centers and park-and-rides, all play a role in the accessibility of transit to the county residents as well as to people needing to

access jobs and services in the county. Within the transit system, there are choices on bus type, service frequency and hours that all contribute to the level of service provided.

In addition to the seven fixed route transit systems, there are other transportation services that connect people to places they need to go on demand. These transportation services are discussed later in this memorandum but are not specifically included within the TDP. These on-demand transportation services are planned for through the Clackamas County Coordinated Transportation Services Plan for Seniors and/or Persons with Disabilities.

Service Providers

Seven primary transit providers provide service within Clackamas County across 46 fixed-route bus, community shuttle, light rail, and commuter rail routes. Twenty-six of these routes, nearly 60 percent, also operate on Saturdays, and 19 routes, just over 40 percent, also operate on Sundays. Figure 1 and Figure 2 show the primary service providers and districts within Clackamas County. *Detailed route information is available in Table A-1 in Appendix A.*

The tax rates indicated below are separate from Oregon House Bill 2017's (HB2017) tax withholding of 0.1% of wages earned for residents of Oregon and wages of nonresidents who perform services in Oregon.

Canby Area Transit (CAT)

The Canby Area Transit District, established in December 2001, shares its boundary with Canby's urban growth boundary (UGB). The district includes all areas within the Canby city limits as well as adjacent land within the Canby UGB. CAT's transit network connects Canby to Woodburn and Oregon City.

Funding: A 0.6% payroll tax rate is levied on all salaries, commissions, tips, bonuses, fees, and other items of value (\$6 for every \$1,000 of taxable wages) within the district. Wages from federal credit unions, public school districts, 501c3 organizations, domestic service in a private home, and religious organizations are exempt from the payroll tax.

Services and Cost:

- Route 99X between Woodburn, Canby and Oregon City;
- A general public dial-a-ride service within the Canby UGB; and
- Complementary Americans with Disabilities Act (ADA) paratransit dial-a-ride service to eligible individuals who are unable to access the fixed-route service.

A one-way fare is \$1, which is paid cash only or via punch passes. Monthly passes are available for \$20. Discounts are available for youth.

CCC Xpress Shuttle

Funding: The CCC Xpress Shuttle has been supported by a Metro Regional Travel Options grant and continues to be supported from student fees.

Clackamas Community College (CCC) provides free shuttle service between its Oregon City and Harmony campuses and the Clackamas Town Center MAX Station. Service is only available during school terms, but are open to the public and free. The CCC Xpress Shuttle does not have a service district.

Mt. Hood Express

Funding: The Mt. Hood Express is a public-private partnership. Timberline Lodge, Mt. Hood Skibowl, and the Mt. Hood Oregon Resort provide matching funds to meet requirements for transit funding.

Services and Cost: Clackamas County operates two routes that constitute the Mt. Hood Express: the Express Route with service between Sandy, Government Camp and Timberline Lodge, and the Village Shuttle Route with service between Sandy and Rhododendron. One-way fare is \$2, and a day pass is \$5. The Mt. Hood Express shuttle does not have a service district.

Sandy Area Metro (SAM)

Funding: SAM is supported by a local business tax set at 0.6% (\$6 for every \$1,000 of taxable wages). The payroll tax is an employer-paid tax and is assessed on all businesses that transact business in the City of Sandy. All businesses and contractors working in Sandy are responsible to apportion the amount of tax due to the City based on the amount of work they do in Sandy.

Services and Cost: SAM runs two intercity bus routes connecting to Gresham and Estacada, along with a shopping shuttle within Sandy. All transit rides that remain within the City of Sandy are free; otherwise, a one-way fare is \$1. STAR dial-a-ride, which provides the majority of the agency's ADA paratransit service, is a reservation-only service with a \$1 fare per ride.

South Clackamas Transportation District (SCTD)

The SCTD service district includes the entire City of Molalla, along with unincorporated areas and rural communities between Molalla, Canby and Oregon City such as Liberal, Mulino, Carus, Lone Elder, Macksburg, Needy, Hamricks Corner and Rural Dell.

Funding: The SCTD tax rate is currently set at 0.5% of wages paid to employees or 0.5% of net earnings from self-employment in excess of \$400.

Services and Cost: SCTD provides two intercity bus routes to Canby and CCC as well as a city loop service in Molalla. SCTD charges \$1 per ride on the commuter services to CCC and Canby; there is no charge for the Molalla City route.

South Metro Area Regional Transit (SMART)

SMART is the City of Wilsonville's transit service. SMART's district boundary is set at Wilsonville's city limits. SMART provides connections to TriMet in Tualatin and at the Wilsonville Transit Center, to Cherriots in Salem, and to CAT in Canby, as well as service within Wilsonville.

Funding: SMART collects a 0.5% payroll and self-employment tax on employers inside Wilsonville, as well as on employers located outside the City if any employee or commission merchant does business in the SMART transit district. Employers do not have to pay both the Wilsonville payroll tax and TriMet payroll tax on the same taxable wages.

Services and Cost: SMART operates three intercity bus routes, four Wilsonville local bus routes and two shuttle routes to specific city neighborhoods. Inter-city destinations include Tualatin, Canby and Salem. The 1X Salem bus line is jointly operated with Cherriots, Salem's transit provider, with a one-way fare of \$3. Service to Canby is \$1.50 each way. All other routes, including inter-city service to Tualatin and the shuttles to Charbonneau and Villebois are fareless. Dial-a-ride service includes ADA paratransit, general public dial-a-ride, service for people 60 years of age and older, and out-of-town medical trips. All dial-a-ride trips except for medical trips are limited to SMART's service district.

TriMet

The portion of TriMet's service district in Clackamas County includes the cities of Oregon City, Milwaukie, Lake Oswego, West Linn, Gladstone and Estacada. The majority of Happy Valley is in the service district, but areas east of SE 145th Avenue and SE King Road (including the unincorporated communities of Damascus and Boring) are largely outside the district boundary, TriMet's district boundary outside Oregon City ends at S Henrici Road, runs west to the Willamette River, and then runs along the north side of the Willamette River to Wilsonville.

Funding: In 2020, TriMet's payroll tax rate was 0.7737% for wages paid by employers and net earnings from self-employment for services within TriMet's service district boundary.

Services and Costs: TriMet operates 24 fixed-route bus lines in Clackamas County, two light rail lines (MAX Orange Line to Milwaukie and MAX Green Line to Clackamas Town Center) and one commuter rail line (WES to Wilsonville). TriMet fixed route bus and rail service costs \$2.50 for 2.5 hours, \$5 for a day pass, and \$100 for a monthly pass. Honored citizens (age 65 and over), youth (ages 7 to 17) and low-income residents (earning less than double the federal poverty level) are eligible for a \$1.25 2.5-hour pass, \$2.50 day pass and \$28 monthly pass.

TriMet provides LIFT paratransit service for people with disabilities or disabling health conditions that prevent them from independently taking bus or rail service. LIFT's service area is three-quarters of a mile beyond the outermost portions of the fixed-route bus and rail network. LIFT fares are \$2.50 one-way.

Adjacent Fixed-Route Transit Services

There are four connecting fixed-route services that provide service to Clackamas County transit riders, including two – Cherriots in Salem and Woodburn Transit System in Woodburn – that have direct connections with Clackamas County transit providers.

Cherriots: Bus service within Salem-Keizer and to adjacent communities including Wilsonville, Woodburn, Silverton, Dallas, Monmouth and Gates. Buses operate Monday through Saturday; there is no Sunday service. Fares range between \$1.60 and \$3, with monthly passes available. Reduced rates and passes are also available.

Woodburn Transit Service: Two local routes in Woodburn: an express loop operating Monday through Friday, and a more comprehensive route that operates seven days a week. Fares are \$1.25 per ride, with four-ride and 20-ride passes available.

Central Oregon Breeze: Service between Bend and the Portland metropolitan area, with stops at Government Camp, Welches and Sandy in Clackamas County. Eastbound and westbound service operates seven days a week. Reservations can be made in advance, and flag stops along the route can be coordinated with a reservation.

Amtrak Cascades: Trains between cities in Oregon, Washington and British Columbia. Major cities along the route include Vancouver, B.C., Seattle, Portland and Eugene. Four daily trains serve the Oregon City Amtrak station: one with service between Portland and Eugene, and three with service between Seattle and Eugene.

Transit Centers and Park-and-Ride Facilities

Transit centers are major transit hubs where numerous bus or rail lines converge. TriMet operates three transit centers in Clackamas County: Clackamas Town Center, Lake Oswego Transit Center, and the Oregon City Transit Center. Other transit centers include Wilsonville Transit Center, Canby Transit Center, Sandy Transit Center and Clackamas Community College (in Oregon City).

Park and rides often have numerous bus or rail lines, but the emphasis is on large parking lots where people park their vehicle and take transit. Some park and rides, such as Clackamas Town Center, are also transit centers. Informal park and rides do not have designated parking spaces devoted for people taking transit but are places where people park their cars to take transit. The Canby Transit Center only has commercial parking, but transit riders are parking their cars in the Thriftway parking lot.

There are 18 formal and informal park-and-ride facilities across Clackamas County, with 2,926 parking spaces within the 15 park-and-rides with a known number of parking spaces. The five largest park-and-rides have 2,519 parking spaces (86% of the total); of these, three are park-and-ride lots along the MAX Green or Orange lines, one park-and-ride is located in Milwaukie serving TriMet Lines 34 and 99, and one is the Wilsonville Park-and-Ride with access to all SMART lines and TriMet's WES commuter rail. There is one formal or informal park-and-ride each within Canby, Molalla, Sandy, and Wilsonville, while the remaining park-and-rides are all located within TriMet's service district.

TriMet has one bike-and-ride at the SE Park Avenue MAX Station at the terminus of the MAX Orange Line. This is a secure facility for locking bicycles inside the park-and-ride garage. TriMet has reserved bicycle lockers at the SE Fuller Road, Clackamas Town Center, Wilsonville and Milwaukie park-and-rides. TriMet also has first-come, first-served bicycle lockers at the Milwaukie/Main Street MAX station.

Figure 1. Clackamas County Transit Overview – County Extents

Figure 2. Clackamas County Transit Overview – TriMet Extents

Transportation Services - Demand-Response Services

Demand-response services, that provide curb-to-curb transportation, are typically limited with respect to the population that can access them and are designed specifically for transporting the elderly and/or persons with disabilities. In the past, a primary source of funding for these services has been through the Special Transportation Fund (STF) and investment guided through the Clackamas County Coordinated Transportation Plan. Recently, the state consolidated the STF Advisory Committee and the State Transportation Improvement Fund Advisory Committee. At this point, the impact of the consolidation on the STIF program is unclear.

Ride Connection: This Portland-based private, non-profit organization coordinates operation of small community-based transportation providers in Clackamas, Multnomah and Washington counties for qualifying seniors and people with disabilities. Most users qualify for ADA services. Ride Connection offers door-to-door rides, free of charge, which must be scheduled at least four days in advance. Ride Connection also provides services and assistants for medical-based transportation, including dialysis transportation and medical shuttles.

TriMet LIFT: This paratransit service is a shared-ride for people with disabilities or disabling health conditions who require assistance beyond standard TriMet accessibility measures. Service is provided up to three-quarters of a mile beyond the outermost portions of TriMet bus and rail services, 23 hours a day (3:30 AM to 2:30 AM), seven days a week. Requests must be received before 5 PM the day prior to the reservation. Arrangements for reoccurring rides are available.

Ride to Care (Non-Emergency Medical Transportation): Operated in conjunction with area healthcare providers and Washington, Multnomah and Clackamas counties, Ride to Care is a scheduled ride service specifically concerned with aiding patients with mobility issues. This free shuttle service is available 24 hours, 7 days a week for eligible members of Health Share.

TriMet Medical Transportation Program: TriMet provides non-emergency medical transportation to eligible Oregon Health Plan clients traveling to covered medical services who have no other way to get to their medical services. TriMet contracts with local companies to provide medical transportation rides, so rides are dependent on the availability of a provider and must be arranged as far in advance of an appointment as possible.

Transportation Reaching People (TRP): TRP is a volunteer-based program for Clackamas County seniors and persons with disabilities. The service is available free of charge for medical appointments and essential errands. Trained drivers use their own vehicles to assist eligible residents.

Veterans Helping Veterans: Provided by Ride Connection, this program matches volunteer veterans with other veterans, as well as spouses and widows, for rides to medical appointments or for other basic needs. If veterans choose to use their own vehicle for this personalized transportation, mileage reimbursement is available. The service is provided free of charge. Rides can be arranged by calling Ride Connection.

Senior Center Shuttle Services: Many senior centers provide transportation for their residents within and beyond their cities. For example, The Molalla Adult Center receives Ride Connection funding to provide demand-response services. Service structures vary in how much service is provided, though services are typically free.

Other Services and Programs

Other transportation programs complement fixed-route and demand-response services within the service areas of Clackamas County providers. These services include ridesharing, travel training and fare relief programs.

Drive Less Connect: Connects commuters in Oregon for vanpools, carpools and bike groups. The platform is also used to organize commuter challenges by ODOT and its regional partners. This service is transitioning to a new platform called Ride Amigos.

RideWise: A travel training program for older adults and people with disabilities run by Ride Connection and TriMet, providing information on travel choices and methods for safely and independently accessing public transportation. The free training is tailored to each individual's ability level and is provided to users in Multnomah, Clackamas and Washington counties. TriMet LIFT eligibility is not rescinded upon completion of the program, the training can take place wherever the user is most comfortable and is provided by a qualified representative of the Ride Connection Program.

Access Transit: Fare Relief: TriMet provides, and Ride Connection administers, grants of up to \$30,000 in TriMet fares for qualified nonprofit and community-based organizations to disburse to low-income recipients.

System Connectivity

System connectivity is important in Clackamas County on many levels, including how the rural cities are connected to each other and to the urban area, and connectivity within the urban area in the TriMet district. Since the county is so large, travel times between destinations can be fairly long. The frequency of service and the number of transfers significantly impact the overall transit experience.

This section examines ease of travel by transit (number of transfers, travel time, frequency of transit service) to destinations in and around Clackamas County during peak commuting times. Connectivity across Clackamas County is largely provided by small, rural transit providers, who all extend beyond their service district to provide connectivity. Prioritizing these providers can help to alleviate barriers to transit travel in Clackamas County, and the County can grow their role as a coordinator to help understand and provide more cohesive transit across the county. Key findings, described further in this section, include:

- Areas east of 172nd Ave in Happy Valley, Damascus and Boring are not connected to transit.
- Downtown Portland is accessible with one transfer or less from nearly all locations in Clackamas County that are connected to transit; however, travel times from places outside the TriMet district are more likely to reach 90 minutes or more.
- The SE Park Avenue MAX Station, the southern terminus of the MAX Orange Line, is broadly accessible by frequent service bus and rail lines. However, only residents in Oregon City, Gladstone or Milwaukie can reach this station without transferring.
- Clackamas Town Center is reachable in two transfers or less from every incorporated community in northern Clackamas County. While many locations in Multnomah County can reach Clackamas Town Center on light rail, very few communities in Clackamas County can use light rail to get here.
- A majority of incorporated communities in the county can reach Oregon City by transit in less than an hour with one or no transfers. Wilsonville is notably not directly connected to Oregon City or West Linn.

- Gresham, a major regional jobs destination for Clackamas County residents, is challenging to reach by transit from Clackamas County, with two transfers required to travel between Happy Valley and Gresham. Within Clackamas County, only Sandy residents are able to reach Gresham in less than 30 minutes and without a transfer.
- There is one TriMet route that runs along OR 212 in the Clackamas Industrial Area.
- Intercity routes outside of the Portland metropolitan Urban Growth Boundary include Wilsonville-Canby, Canby-Oregon City, Canby-Molalla, Molalla-Oregon City, Sandy-Gresham, and Sandy-Estacada. East-west connections are limited in rural Clackamas County.

County Transit Connectivity

Figures 3 through 7 show the transit connectivity and number of transfers from locations in Clackamas County to destinations across the Portland metropolitan region.

Figure 3 shows the following:

- Transit riders from nearly all cities in Clackamas County can reach downtown Portland during commute hours via a direct route or with one transfer.
- Only people traveling from Mt. Hood Village require two transfers – one in Sandy and another in Gresham.
- The unincorporated areas of Damascus and Boring have no transit connection to downtown or any other location within the County.
- Travel times from the most-distant locations – Molalla, Estacada, Sandy, and Mt. Hood Village – exceed 90 minutes.

Figure 3. Transit Connectivity from Clackamas County Locations to Downtown Portland

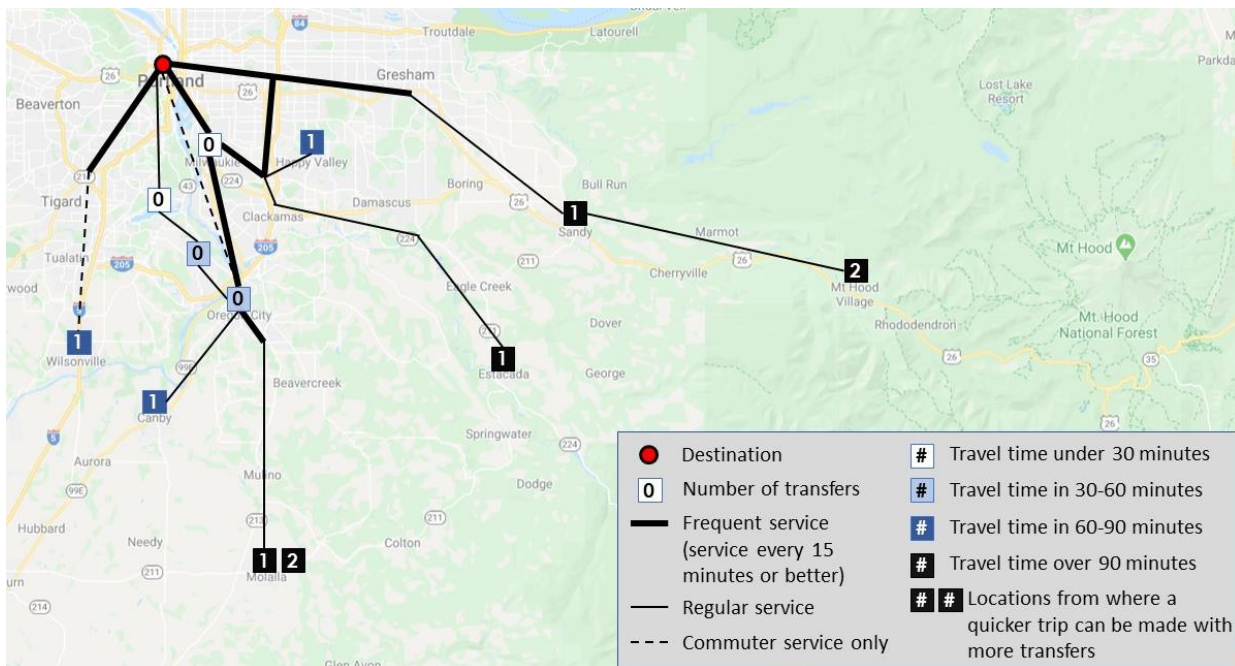


Figure 4 shows transit connections between selected locations in Clackamas County to the SE Park Ave MAX station, the southern terminus of the MAX Orange Line.

- There are four destinations – downtown Portland, Milwaukie, Oregon City, and West Linn – that can reach this destination in under 30 minutes by transit.

- Unlike the situation depicted in Figure 3, only Sandy and Mt. Hood Village have travel times exceeding 90 minutes, but travelers from both locations have to make one more transfer compared to traveling to downtown Portland.
- During typical commute hours, it is quicker from Wilsonville to take SMART to CAT to TriMet than to take TriMet for the whole trip through downtown Portland.

Figure 4. Transit Connectivity from Clackamas County Locations to SE Park Ave MAX Station

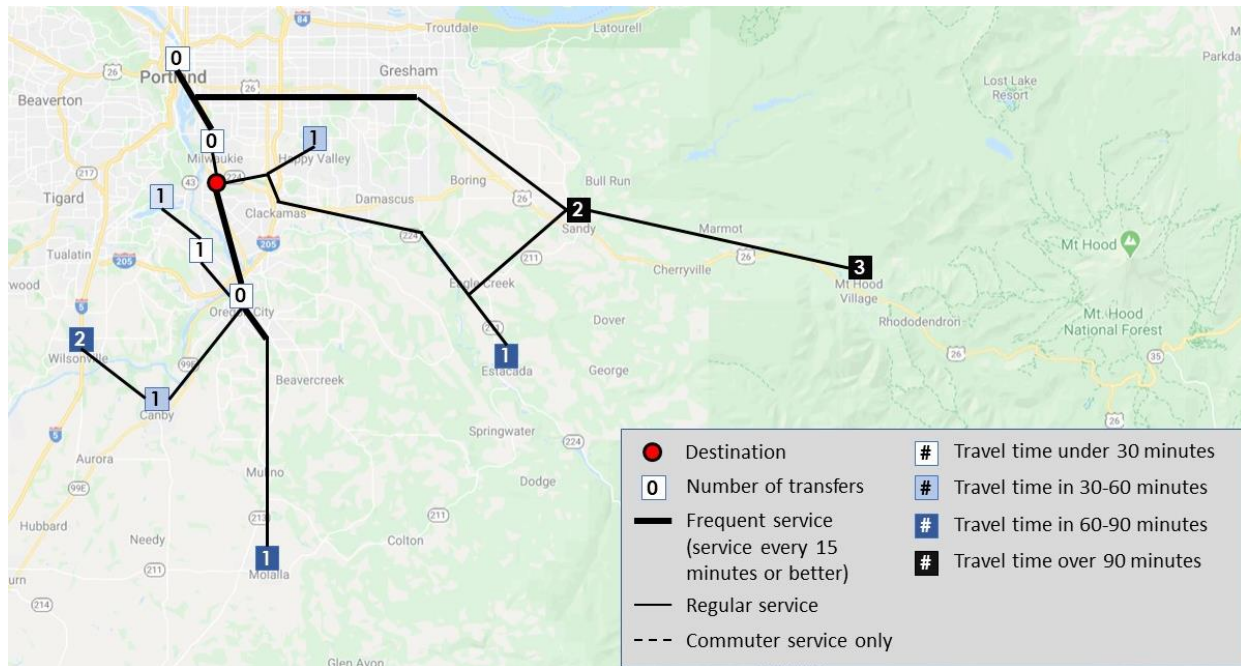


Figure 5 shows transit connections between selected locations in Clackamas County to Clackamas Town Center.

- Compared to the SE Park Ave MAX Station, there are more locations that do not require a transfer, and there are no locations that require more than two transfers.
- All but four destinations (Sandy, Mt. Hood Village, Molalla, and Wilsonville) can reach Clackamas Town Center by transit during typical commute hours in under one hour.

Figure 5. Transit Connectivity from Clackamas County Locations to Clackamas Town Center

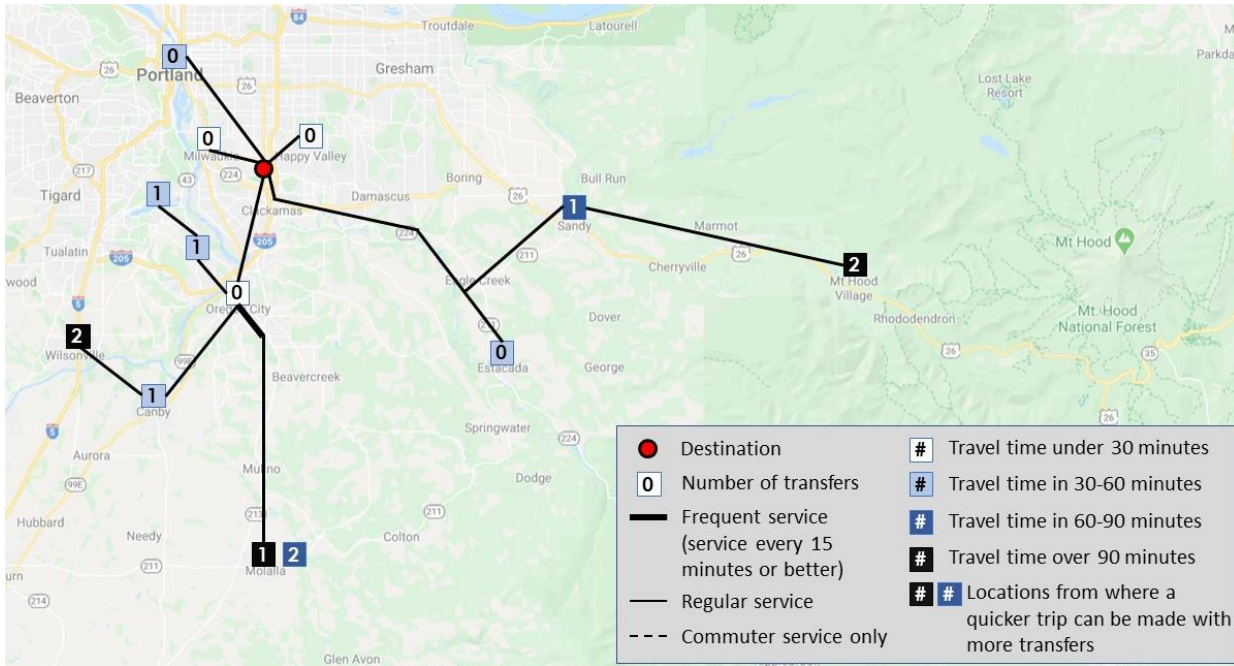


Figure 6 shows transit connections between selected locations in Clackamas County to Oregon City Transit Center.

- All but two locations can reach Oregon City with one transfer or fewer and in under an hour on transit.
- There is no transit connection between Tualatin and Oregon City or West Linn.
- Sandy (with two transfers) and Mt. Hood Village (with three transfers) each take more than 90 minutes by transit during typical commute hours.

Figure 6. Transit Connectivity from Clackamas County Locations to Oregon City Transit Center

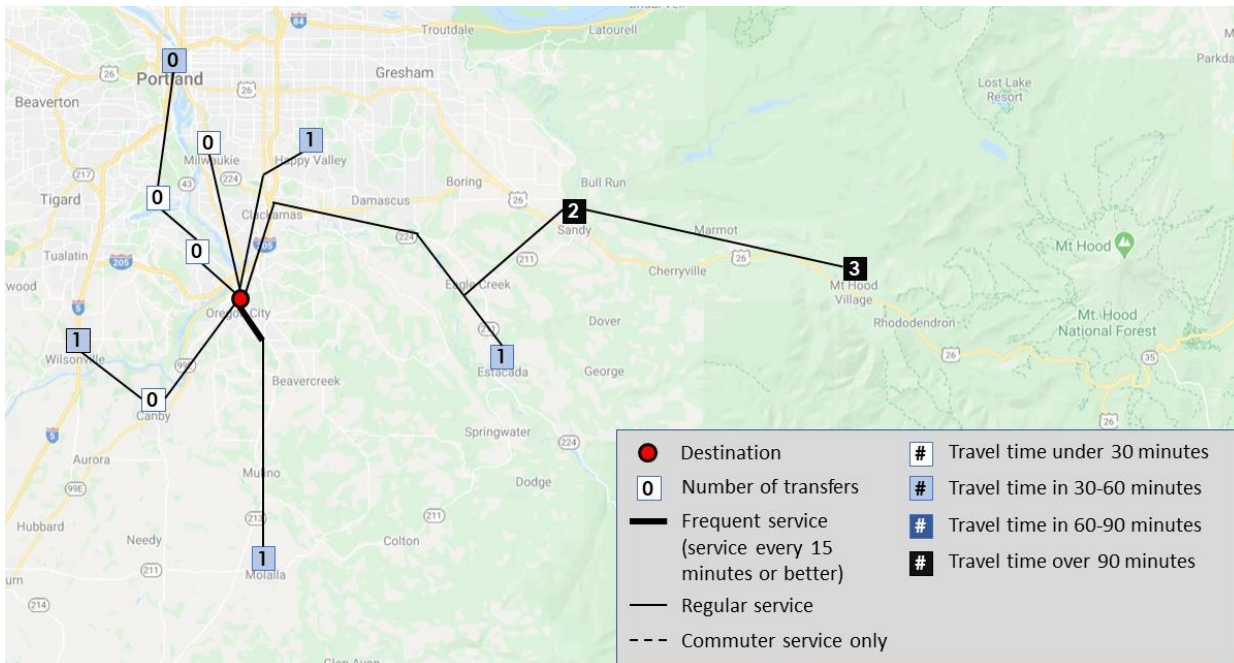
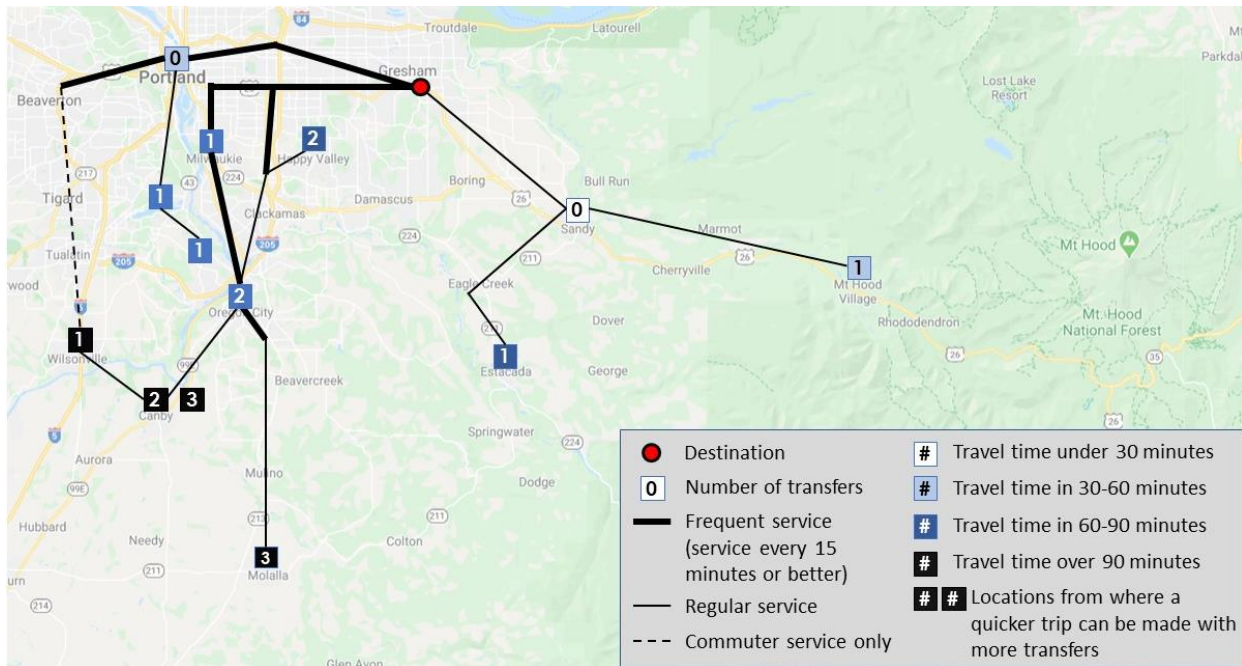


Figure 7 shows transit connections between selected locations in Clackamas County to Gresham Central Transit Center. Gresham is a large jobs center in the region and a common work destination for people who live in Clackamas County (described under “Jobs and Employment” in this memorandum). Gresham is difficult to reach by transit from Clackamas County.

- There are only three locations – Portland, Sandy, and Mt. Hood Village – that can reach Gresham in less than one hour *and* require no more than one transfer.
- Since there is no transit service along SE 172nd, in Damascus or Boring, traveling from Happy Valley to Gresham Central Transit Center, which is just over six miles away, takes between 60-90 minutes on transit and requires two transfers.

Figure 7. Transit Connectivity from Clackamas County Locations to Gresham Central Transit Center



Travel Time on Transit

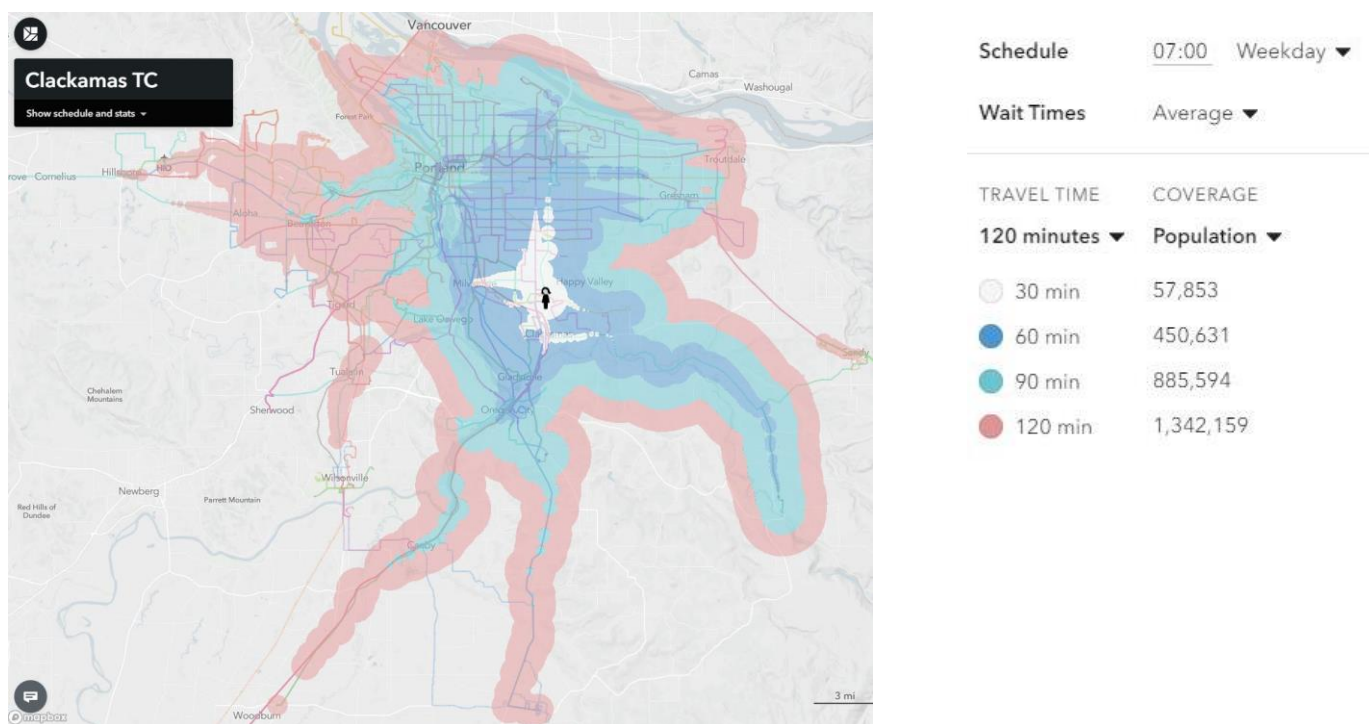
The following section illustrates travel times by transit from locations across Clackamas County to destinations across the region. These visualizations were created using Remix transportation mobility software and were created using a 7 AM start time from the chosen location. These may include substantial walking distances, and walking distances are shown regardless of pedestrian network (as the crow flies). Key findings include:

- Areas within the Portland metropolitan UGB, such as Clackamas Town Center and Oregon City, have multiple destinations accessible by transit within a half hour or hour. The majority of the Portland metropolitan region is accessible from these places within two hours by transit.
- Other locations provide transit accessibility to specific areas within the county. From Sandy, areas in northeast Clackamas County are more well-suited. From Wilsonville, this includes areas around Canby and Oregon City.
- Other destinations, including Canby, Molalla and Estacada, have limited transit accessibility beyond the respective state highway that runs through each city.
- Compared to automobile travel times, transit travel times can be 3-4 times as long. For example, Getting to Clackamas Town Center from Sandy, Molalla, and Woodburn is approximately 30 minutes in an automobile and 120 minutes (2 hours) on transit.

Clackamas Town Center: Clackamas Town Center is a major destination and transit hub for the county and the Portland metropolitan region.

- Virtually the entire metropolitan region, as well as Sandy, Molalla and Woodburn, is reachable within two hours by transit from Clackamas Town Center during typical commuting times.
- The majority of Washington County cannot be reached in less than 90 minutes.
- Downtown Portland, much of southeast Portland and Oregon City are reachable within one hour.
- Other Clackamas County destinations, such as Lake Oswego within the metropolitan area and Canby outside of it, as well as large job centers, such as Gresham, and northwest and northeast Portland are reachable with a 60–90 minute trip. The average travel time to work in the Portland Metro area is about 30 minutes¹.
- Wilsonville and Sherwood cannot be reached within two hours.

Figure 8. Travel Times from Clackamas Town Center

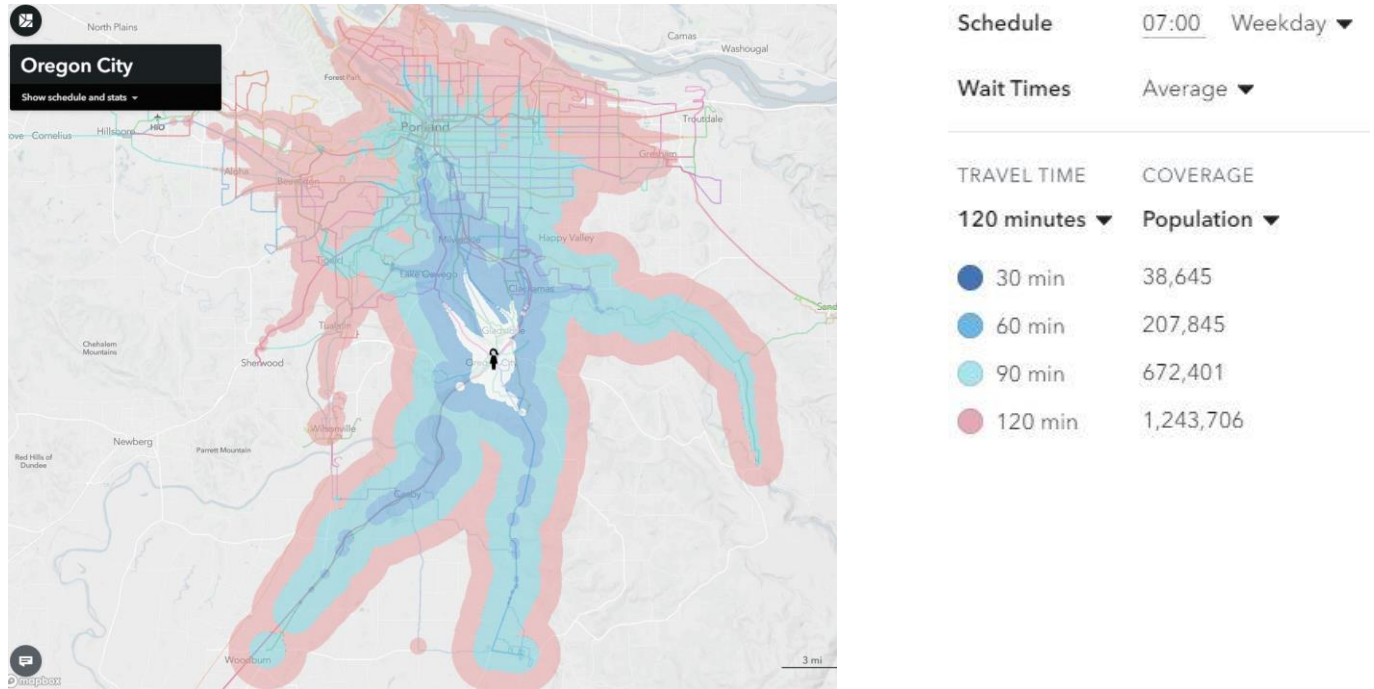


Oregon City Transit Center: Figure 9 shows that compared to Clackamas Town Center, fewer regional destinations are reachable within two hours of the Oregon City Transit Center.

- Only Milwaukie and the McLoughlin corridor are reachable within 30 minutes.
- Milwaukie, Lake Oswego, the Clackamas Industrial Area and Canby are accessible within one hour, while downtown Portland is reachable within 90 minutes.
- Several large regional job centers -- including Beaverton, Gresham, Tualatin, and Wilsonville - are only reachable within two hours.

¹ <https://www.census.gov/library/visualizations/interactive/work-travel-time.html>

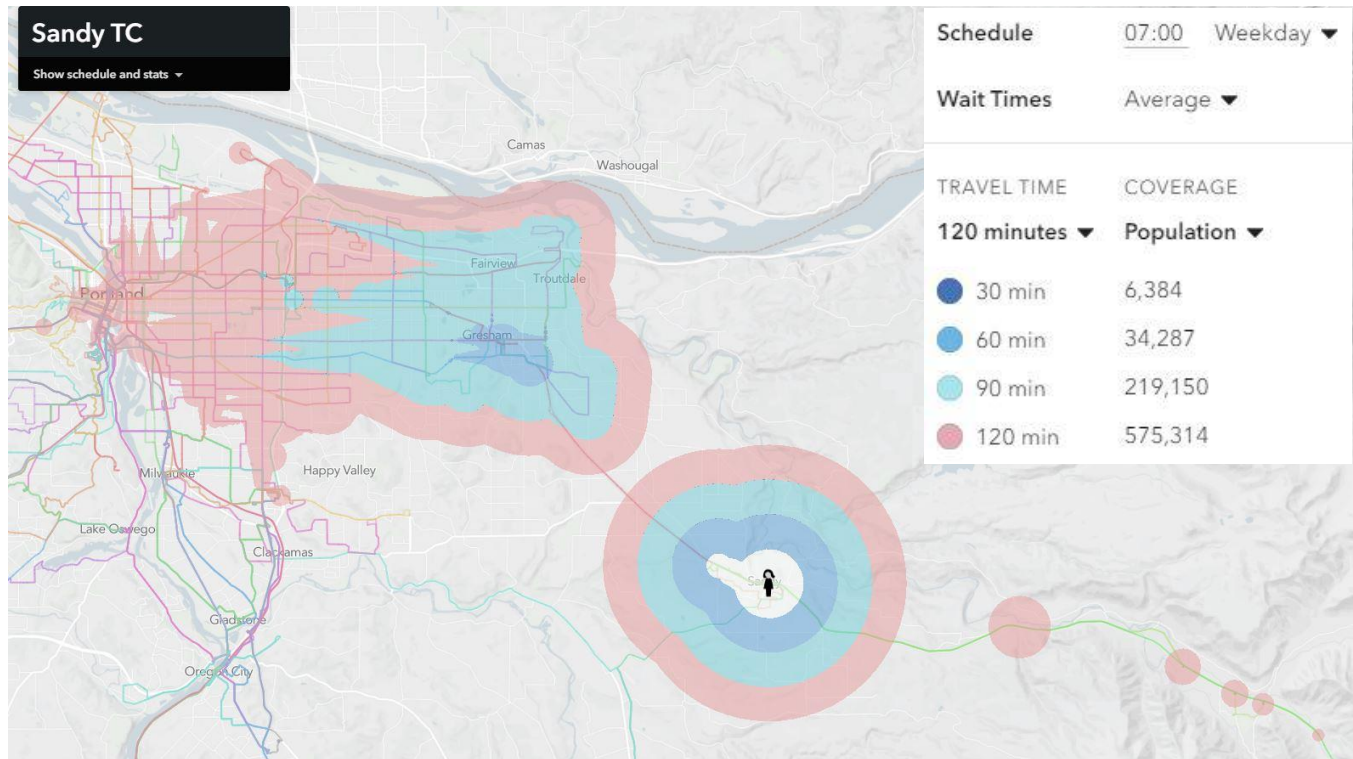
Figure 9. Travel Times from Oregon City Transit Center



Sandy Transit Center: Sandy is outside the Portland metropolitan region’s UGB. Being farther away from the region means that there are fewer transit-accessible destinations within two hours.

- Points within Gresham can be reached within one hour, and much of East Portland and eastern Multnomah County are reachable within 90 minutes.
- Downtown Portland and the northern edge of Clackamas County are reachable in two hours.
- Locations that are not accessible from Sandy Transit Center within two hours include Milwaukie, Clackamas Town Center and Oregon City.

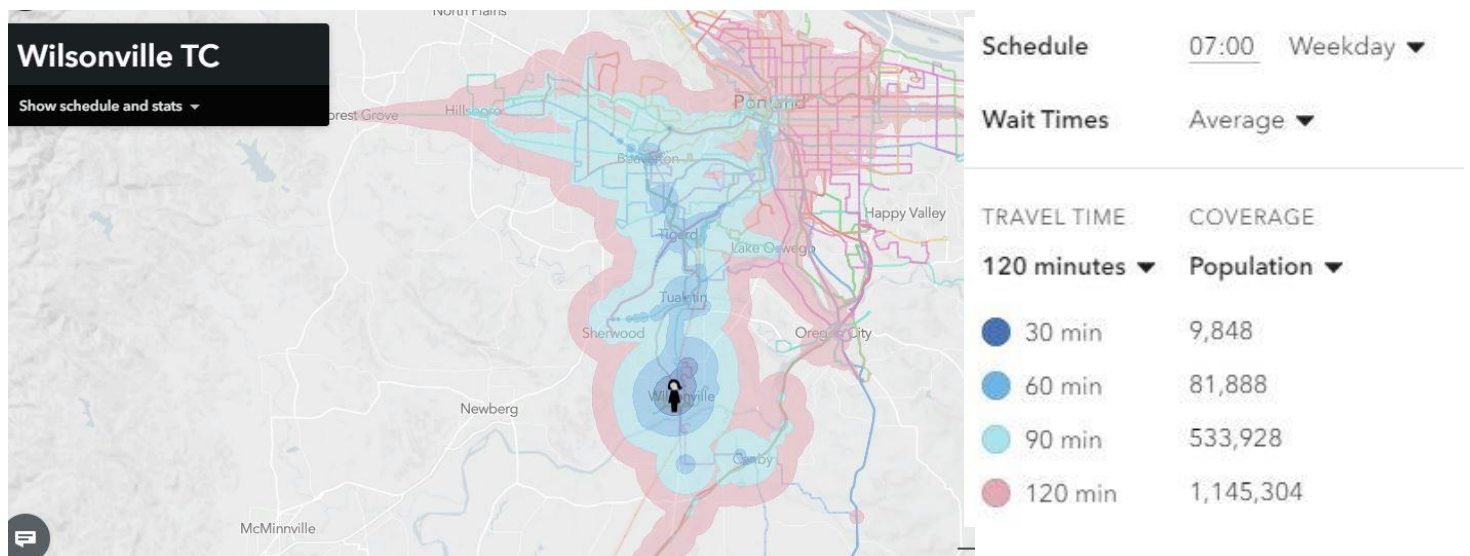
Figure 10. Travel Times from Sandy Transit Center



Wilsonville Transit Center: While the majority of Wilsonville is located in Clackamas County, its geography and transit network are more aligned with Washington County. Figure 11 shows the areas that are accessible by transit within two hours of Wilsonville Transit Center.

- The downtown areas of cities in Washington County, and stops along the WES route are generally accessible within one hour from Wilsonville.
- Much of Clackamas County is only accessible after two hours on transit, and the remaining urbanized areas of the northern county are not accessible in this period.
- Downtown Portland is reachable within 90 minutes.

Figure 11: Travel Times from Wilsonville Transit Center



Other County Destinations: Several other communities outside of the Portland metropolitan UGB have transit service:

- In Canby, destinations along Highway 99E are well served, and riders can reach Wilsonville, Tualatin, Lake Oswego, Clackamas Town Center and Molalla within 90 minutes. Downtown Portland is reachable in two hours.
- In Molalla, destinations along OR 213 can be reached within 30 to 60 minutes. Oregon City, Lake Oswego, Canby and the McLoughlin corridor are reachable in 90 minutes.
- In Estacada, service within one hour is confined to the OR 211 corridor, the Clackamas Industrial Area and Clackamas Town Center. With access to Clackamas Town Center, much of the county within the Portland metropolitan UGB opens up within a two hour travel time.

System Accessibility

System accessibility refers to where service is provided and how much service is provided. This section explores the distribution of transit service historically, current levels of service provided, and to whom these services are provided: general population, urban v. rural populations, and underrepresented communities. Several of the connectivity key findings, described further in this section, include:

- Transit ridership has followed nationwide and statewide trends, peaking near 2014 with a slight decline since.
- By headway and service span level of service (LOS), 84% of all transit routes in the county are at LOS D or better for headway and 63% of all transit routes in the county are at LOS D or better for service span.
- Approximately 53-54% of transit-supportive areas (TSAs) are currently served by transit, with about the same area served in 2040, assuming no change to service. This indicates growth areas are primarily near existing transit services, but that additional service could connect currently unserved TSAs.
- Clackamas County serves less of their population and jobs within ¼ mile of transit stops compared to Washington County and Multnomah County. However, Clackamas county serves a similar amount of its urban population to Washington County, and a much higher amount of its rural population compared to both Washington County and Multnomah county.
- Clackamas County serves a lower percent of youth and elderly than those ages 18-64, a higher percent of people with a disability than those without, higher percentages of ethnic minorities than non-ethnic minorities, higher percentages of non-English speakers than English speakers, and higher percentages of households below the poverty line compared to households above the poverty line.

Historic Service Provided

Transit agencies that receive federal funding are required to report information about service miles, service hours, and ridership to the National Transit Database (NTD). The most recent years of available NTD data, 2013-2017, for all transit service districts in Clackamas County, are shown in comparison results in Table 1, Figure 12 and Figure 13.

- TriMet results are included in Table 1 but are not included in the figures because the NTD does not provide data by county, so TriMet's data reflects service in all three counties in the region.
- SMART, a suburban system, has higher ridership and somewhat higher ridership per mile and per hour compared to the more rural districts.

- All providers except for SCTD provide a dedicated demand-response service, which are generally less efficient than fixed-route services.

Table 1. FY17 Annual Service Miles, Service Hours, and Annual Rides

	CAT	SAM	SCTD	SMART	TriMet
Service Miles	210,918	341,335	252,324	530,233	36,035,999
Service Hours	14,693	15,919	11,598	34,980	3,100,437
Ridership	76,294	121,227	92,077	306,255	98,468,722
Rides per Mile	0.36	0.36	0.36	0.58	2.73
Rides per Hour	5.19	7.62	7.94	8.76	31.76
Fixed-Route Service	X	X	X	X	X
Demand-Response	X	X		X	X

Note: NTD data are shown by calendar year while the SCTD data are from the financial year.

Figure 12. Rides per Mile by Transit Agency



Figure 13. Rides per Hour by Transit Agency

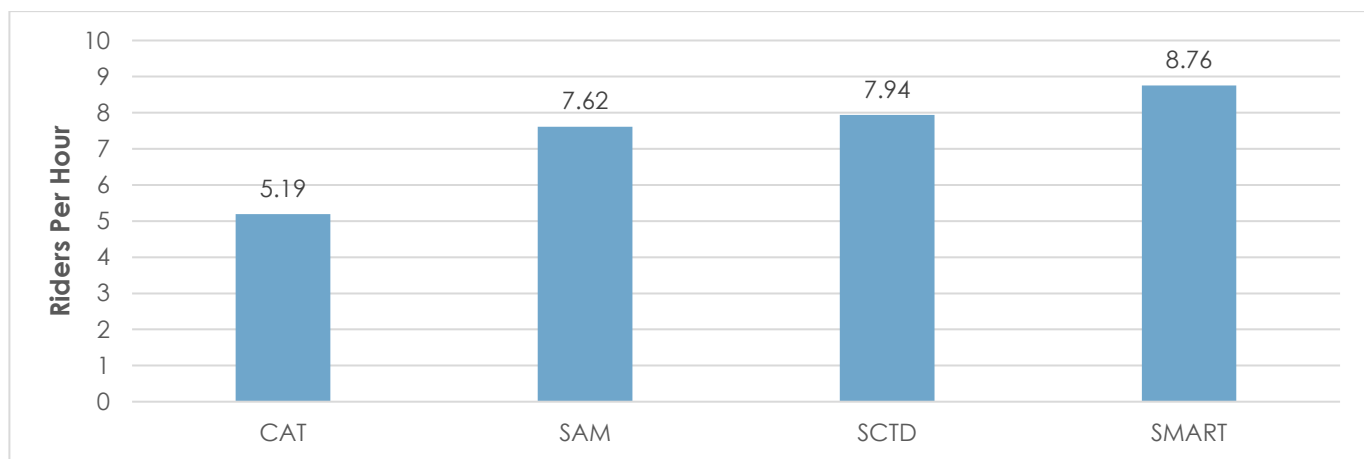
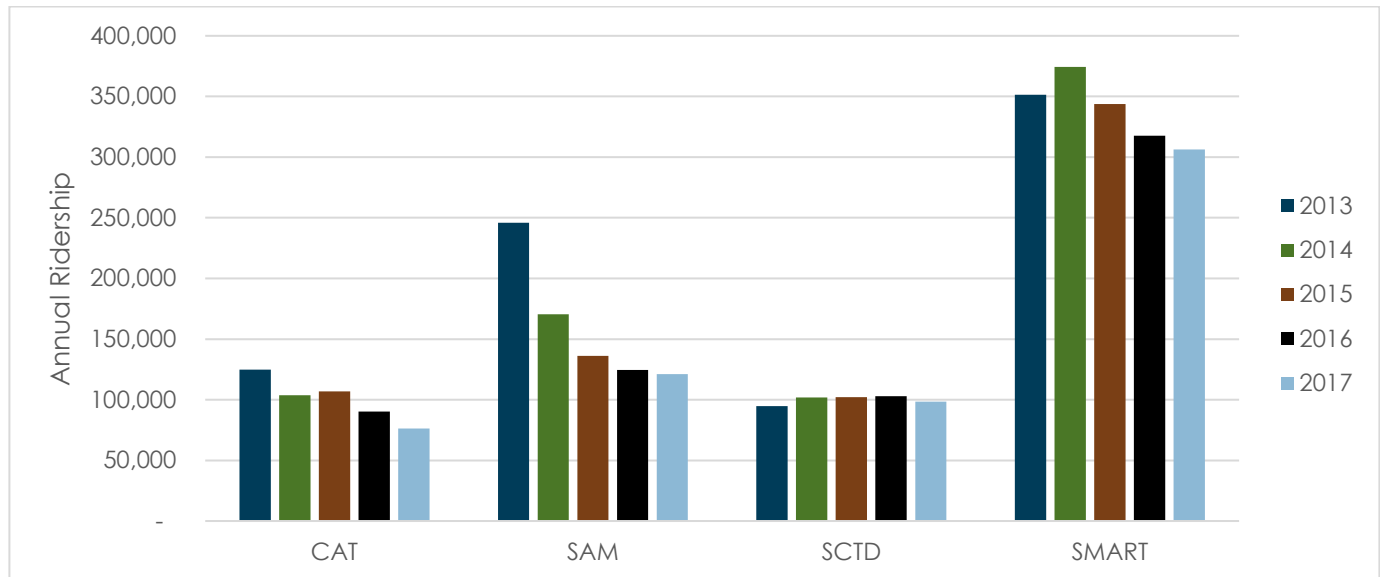


Figure 14 shows ridership data between 2013 and 2017.

- CAT and SAM saw significant reductions in ridership during this time period.
- SMART peaked in 2014 before experiencing steady ridership declines.

- SCTD is the outlier, with stable ridership across the entire time period of around 100,000 annual rides.
- Nationwide, transit ridership peaked in 2014 and other small urban/rural systems have seen similar ridership decline trends.

Figure 14. Year-over-Year Ridership by Transit Agency



Current Level of Service

The current level of service assessment relies on data from the Remix transit planning software and the Transit Network Exploration Tool (TNEt) developed by ODOT to report and analyze transit service information. Remix uses General Transit Feed Specification (GTFS) to view and evaluate transit routes based on current service (evaluated March 2020). TNEt allows for analysis by geographic level (e.g., county), by urban/rural context², and by level of service (stops per day). The TNEt analysis examined a typical day where all data feeds were most active, in this case July 23, 2019.

Headway, Service Span, and Transit-Supportive Area Level of Service

Headway is defined as the amount of time between transit vehicles. If a bus arrives at a stop at 8 AM and again at 8:30 AM, the headway is 30 minutes. Service span is defined as the overall amount of time that a transit line is running during the day. If transit service runs from 5 AM to 10 PM, then the service span is 17 hours long. Transit-supportive areas are defined as places where household or employment density meet a threshold to support transit service. Level of service measures the quality of service on an A-F scale, where A is the best and F is the worst.

The transit level of service analysis included in this report is based on the methodology described in *TCRP Report 100: Transit Capacity and Quality of Service Manual (TCQSM)*. Detailed information about the TCQSM procedures are included in Appendix B.

² TNEt bases its definition of urban on 2010 Census data. Urban areas are considered those with populations greater than 50,000. In the Portland area, only the Portland Metro area (Portland UGB) is considered Urban. Therefore, TriMet and SMART are classified as urban systems while CAT, SAM, and SCTD are rural.

There are 46 transit routes with service in Clackamas County across seven different providers. Table 2 shows the Transit Level-of-Service (LOS) analysis for service frequency and hours of service as defined in the Clackamas County Transportation System Plan (TSP). The most common service frequency LOS ratings are A, B, and C (generally well-served), which collectively account for 75% of all transit routes in the county. Conversely, the most common hours of service LOS ratings are C, D, and E (generally underserved), which account for 85% of all transit routes in the county. *Detailed route information is available in Table A-1 in Appendix A.*

Table 2. Service Frequency and Hours of Service LOS for Transit in Clackamas County

Level of Service	Service Frequency (Headway)	Hours of Service (Service Span)
A	0 Routes (0%)	12 Routes (26%)
B	1 Route (2%)	9 Routes (20%)
C	10 Routes (22%)	14 Routes (30%)
D	18 Routes (39%)	4 Routes (9%)
E	11 Routes (24%)	6 Routes (13%)
F	6 Routes (13%)	1 Route (2%)

Household and employment data were collected from the 2015 and 2040 Metro RTP Model for existing and future conditions. To qualify as a transit-supportive area (TSA) one of the following thresholds must be met to support hourly transit service:

- Minimum population density of 3 households/gross acre; or
- Minimum job density of 4 employees/gross acre.

Higher densities and other factors such as land use patterns and connectivity are needed to support more frequent transit service. Table 3 and Table 4 show the TSA analysis for the year 2015 and 2040, respectively. TSA level of service (LOS) thresholds have been derived from the Clackamas County TSP. In 2015, just under 55% of all people and jobs in TSAs within Clackamas County are served by transit within one-quarter of a mile. In 2040, the number of people and jobs expands by 64% and 62%, respectively, and between 51% of population and 53% of jobs in these areas are expected to be served with transit. Figure 15 and Figure 16 show which TSAs are served and not served by transit. The number of TSAs increases between 2015 and 2040. This TSA analysis uses Metro's RTP model for all of Clackamas County. More refined models with transportation analysis zones (TAZ) at a municipal level for cities outside of the Portland metropolitan UGB were not used in this high-level analysis, which would not take into account the TSAs in communities like Sandy and Molalla, which are generally served by transit.

Table 3. 2015 TSA Analysis and LOS for Transit in Clackamas County

Area Type	2015 Population	2015 Employment
Transit Supportive Area (TSA)	118,908	198,140
Transit Supportive Area Served	62,632	107,264
Transit Supportive Areas Without Service	56,276	90,876
Percent of TSA Served by Transit	53%	54%
Level of Service	LOS E	LOS E
Additional Areas Served by Transit	66,573	39,593

Table 4. 2040 TSA Analysis and LOS for Transit in Clackamas County

Area Type	2040 Population	2040 Employment
Transit Supportive Area (TSA)	194,822	320,484
Transit Supportive Area Served	99,877	170,267
Transit Supportive Areas Without Service	94,945	150,217
Percent of TSA Served by Transit	51%	53%
Level of Service	LOS E	LOS E
Additional Areas Served by Transit	64,447	43,327

General Population Level of Service

Figure 17 and Figure 18 show the trips per day for service within Clackamas County, while Table 5 provides examples of service hours and frequency for the corresponding number of trips per day. The figures show that:

- North-south connectivity is more frequent than service between Clackamas communities.
- No service is provided along 172nd between Happy valley and Gresham, Highway 212 between Sandy and Happy Valley, nor along I-205 between Oregon City and Tualatin or Wilsonville.
- There is also a lack of service along Redland Road (a key east-west corridor in rural Clackamas County) between Estacada and the Clackamas Community College – Oregon City campus.

Table 5. Service Level Example Service

Trips per Day (Level of Service)	Example Route Frequency and Service Hour	Similar Service in Clackamas County
64+	16-hour day, 15-minute headways	MAX Green Line
32	16-hour day, 30-minute headways 8-hour day, 15-minute headways	Sandy Local and Gresham Express TriMet Route 99
16	16-hour day, hourly headways	CCC Xpress Shuttles
8	8-hour day, hourly headways	Molalla to Canby
4	One route, four runs per day	Sandy to Estacada
2	One route, two runs per day	Villages Shuttle

Figure 15. Clackamas County TSAs – County Extents

Figure 16. Clackamas County TSAs – TriMet Extents

Figure 17. Clackamas County Transit Frequency – County Extents

Figure 18. Clackamas County Transit Frequency – TriMet Extents

Table 6 and Figure 19 show the level of service – the number of times a stop is visited per day – provided to residents in Clackamas, Washington, and Multnomah counties. Any bus route to a stop is counted for stops served by multiple routes.

- As shown, Clackamas County has a lower percentage of residents served by any transit service within one-quarter of a mile.
- The percentage of Clackamas County residents with access to at least 32 visits per day is almost half that of Washington County residents and less than one-third that of Multnomah County residents.

Table 6. Resident Access to Transit Stops (0.25-mile radius) by Level of Service

County	Visits per Day - Resident							
	2	4	8	16	32	64	128	256
Clackamas County	45%	45%	44%	34%	23%	12%	2%	1%
Washington County	56%	56%	52%	48%	41%	20%	2%	0%
Multnomah County	86%	86%	84%	81%	76%	60%	14%	2%

Figure 19. Resident Access to Transit Stops (0.25-mile radius) by Level of Service

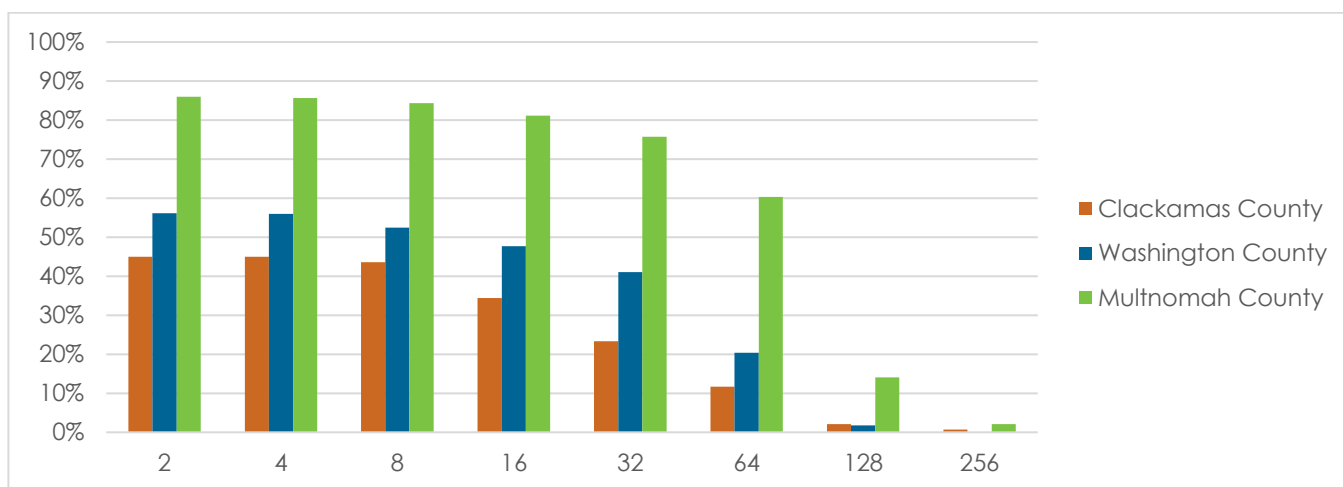


Table 7 and Figure 20 show level of service provided to employment (place of work, rather than workers' homes) in Clackamas, Washington, and Multnomah counties.

- As shown, Clackamas County has a lower percentage of employment sites served within one-quarter of a mile of transit by any transit service.
- Furthermore, Clackamas County employment sites receiving at least 32 visits per day are about two-thirds that of sites in Washington County and about half that of Multnomah County.

Table 7. Employment (WAC) Access to Transit Stops (0.25-mile radius) by Level of Service

County	Visits per Day - Employment (WAC)							
	2	4	8	16	32	64	128	256
Clackamas County	70%	70%	70%	59%	42%	22%	7%	3%
Washington County	80%	80%	77%	69%	62%	35%	9%	0%
Multnomah County	89%	89%	89%	87%	81%	70%	43%	18%

Figure 20. Employment (WAC) Access to Transit Stops (0.25-mile radius) by Level of Service

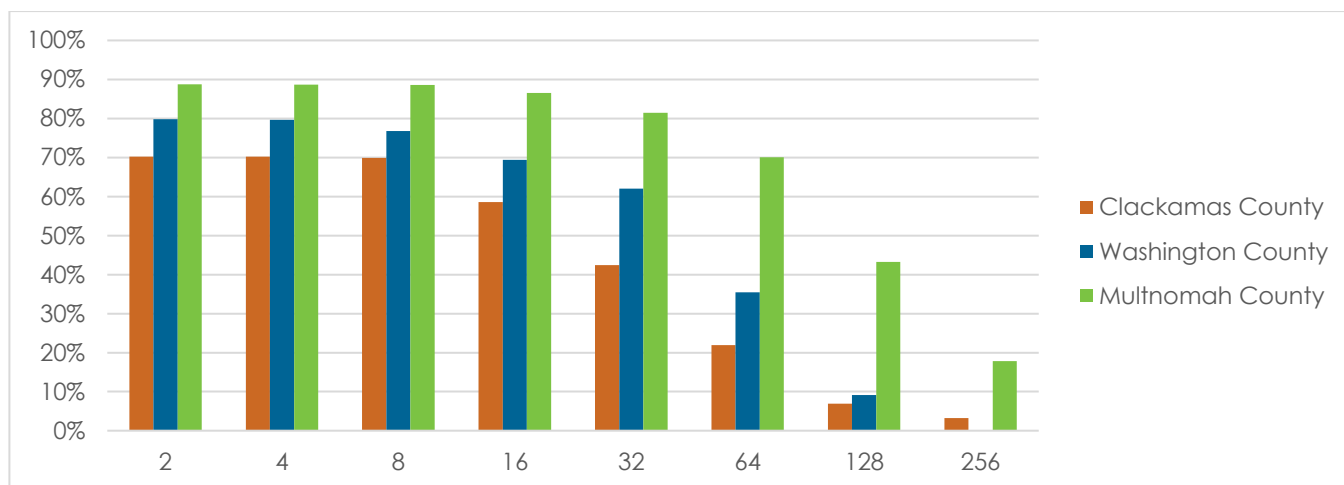


Table 8, and Figure 21 and Figure 22 show level of service to urban and rural areas within Clackamas, Washington, and Multnomah counties.

- As expected, urban areas are better served than rural areas in all counties.
- A higher percentage of rural residents are served in Clackamas County than either Washington or Multnomah county, due to the presence of transit service in larger rural communities (Sandy, Molalla, Canby) and intercity routes providing service to and through communities such as Estacada, Mulino, Carus and Rhododendron.

Table 8. Clackamas County Urban v. Rural Access to Transit Stops (0.25-mile radius) by Level of Service

County	Visits per Day - Resident - Urban							
	2	4	8	16	32	64	128	256
Clackamas County	55%	55%	55%	44%	31%	16%	3%	1%
Washington County	59%	59%	55%	51%	43%	22%	2%	0%
Multnomah County	87%	87%	85%	82%	77%	61%	14%	2%
County	Visits per Day - Resident - Rural							
	2	4	8	16	32	64	128	256
Clackamas County	21%	21%	16%	11%	4%	1%	0%	0%
Washington County	10%	10%	3%	1%	1%	1%	0%	0%
Multnomah County	1%	1%	1%	1%	0%	0%	0%	0%

Figure 21. Urban Access to Transit Stops (0.25-mile radius) by Level of Service

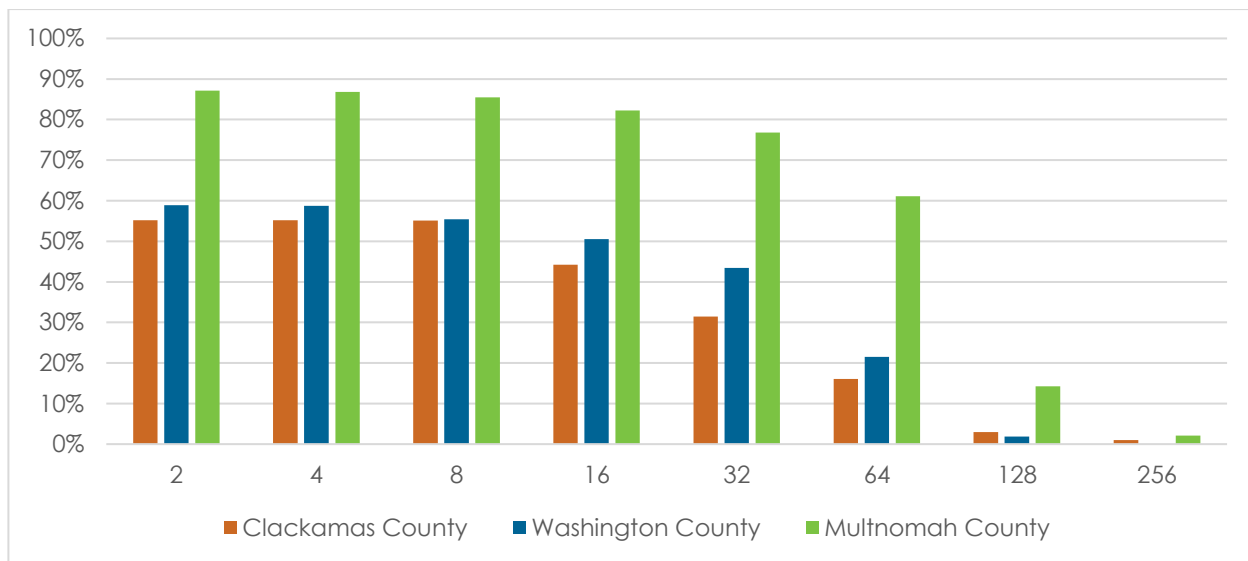
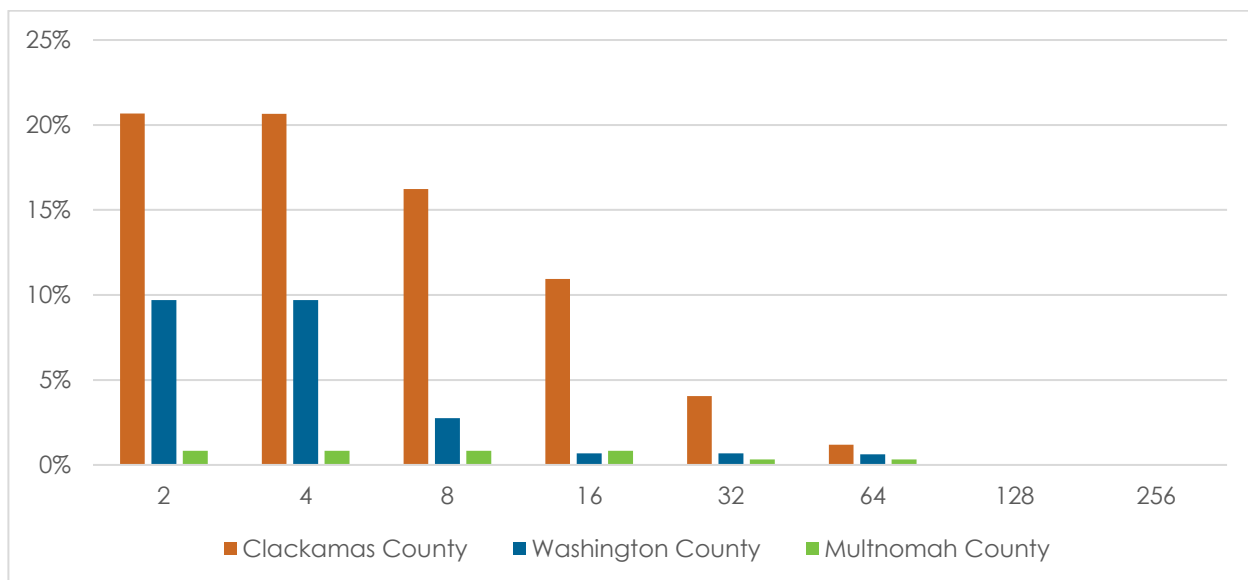


Figure 22. Rural Access to Transit Stops (0.25-mile radius) by Level of Service



Lastly, countywide service was compared to each county's population to understand service per capita. Table 9 shows the current service hours compared to the most-recent year of available population data (2017). Residents of Clackamas and Washington counties receive about 0.10 service hours per capita per day, while Multnomah County residents receive 0.29 service hours per capita per day.

Population density is also shown for the whole of each county and the areas served by transit. As shown, Clackamas has a substantially lower population density than other counties but serves areas of comparable densities.

Table 9. Service Hours per Capita

County	2017 Population	Population Density (per Square Mile)	Population Density of Area served by Transit (per Square Mile)	Service Hours	Service Hours per Capita
Clackamas	412,672	213.8	3,285.1	41,411	0.10
Washington	588,957	789.9	4,558.4	57,391	0.10
Multnomah	807,555	1,828.9	5,526.5	236,333	0.29

Underrepresented Populations Level of Service

Level of service was also evaluated by examining the underrepresented communities within ¼ mile of transit stops compared to historically well-represented communities. Table 10 – Table 14 show the percent served by age, ability, race/ethnicity, language spoken at home, and household income. It should be noted that population data within this tool is limited to 2010 census information, though transit service information is up-to-date. As shown, Clackamas County serves:

- a slightly lower percent of youth and elderly than those ages 18-64,
- a slightly higher percent of people with a disability than those without,
- higher percentages of communities of color,
- higher percentages of language spoken at home, and
- higher percentages of households below the poverty line.

Table 10. Percent Served by Transit by Age

County	Age		
	5-17	18-64	65+
Clackamas County	37%	38%	37%
Washington County	50%	51%	49%
Multnomah County	79%	84%	79%

Table 11. Percent Served by Transit by Ability

County	Ability	
	Persons with a Disability	Persons without a Disability
Clackamas County	40%	38%
Washington County	54%	51%
Multnomah County	83%	82%

Table 12. Percent Served by Transit by Race/Ethnicity

County	Race/Ethnicity							
	American Indian or Alaska Native	Asian	Black or African American	Hispanic or Latino	Native Hawaiian and Other Pacific Islander	White	Other Races	Two or More Races
Clackamas County	45%	38%	48%	50%	38%	36%	28%	41%
Washington County	46%	50%	60%	60%	60%	48%	58%	50%
Multnomah County	81%	82%	89%	85%	87%	82%	84%	82%

Table 13. Percent Served by Transit by Language Spoken at Home

County	Language				
	English	Spanish	Asian & Pacific Islander	Indo European	Other Languages
Clackamas County	37%	52%	37%	43%	30%
Washington County	49%	62%	50%	55%	58%
Multnomah County	82%	85%	83%	79%	89%

Table 14. Percent Served by Transit by Household Income

County	Household Income	
	Above Poverty Line	Below Poverty Line
Clackamas County	37%	49%
Washington County	50%	60%
Multnomah County	81%	88%

Financial Overview

This section provides operating costs for the five Clackamas County transit districts relative to the service provided to understand typical costs in the County and a description of typical funding sources. Figure 23 shows operating cost per service hour, calculated as annual agency operating cost divided by total annual service hours, and Figure 24 shows operating cost per ride, calculated as annual agency operating cost divided by annual rides.

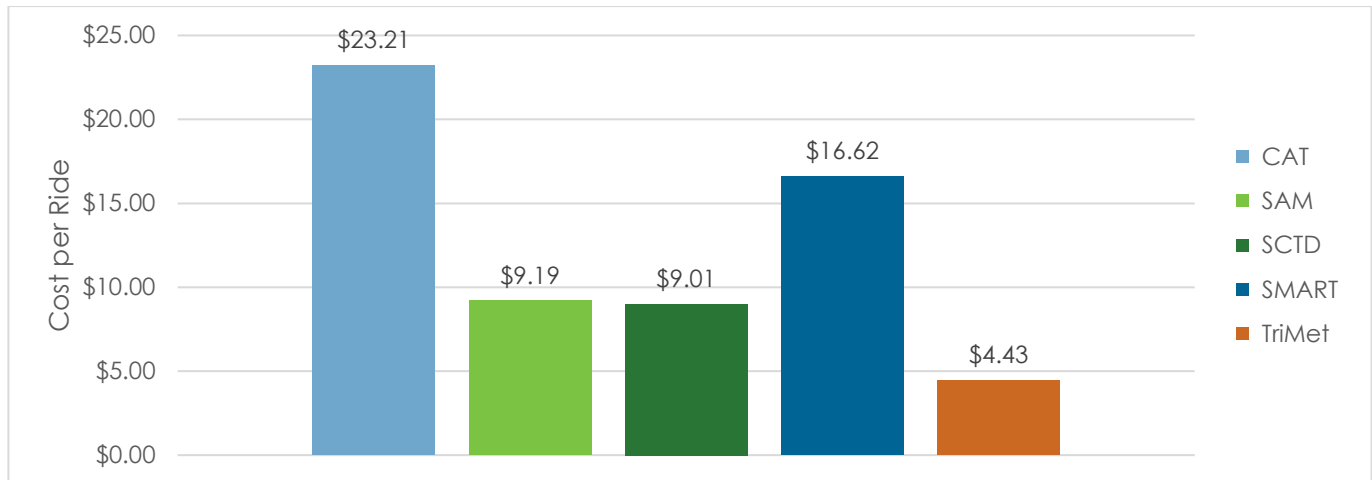
- The two transit agencies that primarily operate within the Portland metropolitan area, TriMet and SMART, have the highest cost per hour at around \$145 per hour.
- SAM and SCTD, two smaller transit agencies with both city and inter-city service, have operating costs around \$70 per hour.
- CAT, with one inter-city route and demand-response service for the general public, fell in-between these two groups at around \$120 per hour.
- Though higher cost, TriMet provides the lowest cost per ride due to its high ridership. CAT has the highest cost per ride.

Nationally, large urban systems (over 1 million in population) operate at a median cost near \$120 per hour, meaning TriMet and SMART are on the upper end of operating cost per hour. Small urban and rural systems operate at a median cost near \$90 per hour, meaning SAM and SCTD are on the lower end and CAT is on the upper end of operating cost per hour.

Figure 23. Operating Cost per Hour by Transit Agency



Figure 24. Operating Cost per Ride by Transit Agency



Typical funding for these transit agencies includes federal formula grants distributed through the state, state funding like HB2017's employment tax, and local funding. Local funding in Clackamas County is primarily an employment tax on the transit district, in addition to HB2017. Fares are a large funding source for TriMet, near 20-30% of revenue, but tend to be smaller for more rural providers, near 5-10%. HB2017 revenue began generating funding for transit agencies in FY2019. The pre-COVID19 projected funds for Clackamas County, its providers, and nearby counties are shown in Table 15. While the funding may be lower given employment tax revenue will be impacted, these funds are still a new funding source for transit providers and expected to support expanded service and/or capital improvements.

Table 15. Projected HB2017 Funding

Agency	FY19-21	FY22-23
TriMet	\$113,619,000	\$57,655,000
Multnomah County	\$117,000	\$60,000
Washington County	\$587,494	\$299,848
Clackamas County	\$984,978	\$503,705
SMART	\$2,667,179	\$1,252,655
CAT	\$636,293	\$287,100
Sandy	\$295,017	\$135,346
SCTD	\$350,263	\$213,278

Existing and Future Population, Employment and Land Use

Demographics

The following describes Clackamas County's existing and future general population characteristics and Title VI populations. The TDP will examine how to improve access to low-income, senior, youth, Limited English Proficiency and other underrepresented populations.

Existing Population

Table 16 lists population growth in Clackamas County as a whole and in selected communities between 2000 and 2017.

- The County has grown 18.2% from 2000 to 2017, while the selected cities have seen significantly greater growth.
- Happy Valley's 300% growth over this time period is attributable to new housing construction and newly incorporated land toward Damascus.
- Cities outside the Portland metropolitan UGB have also been growing fast, with Molalla and Sandy recording nearly 60% and 100% population growth, respectively, between 2000 and 2017.

Table 16. Study Area Population 2000 – 2017

Place	Population (2000)	Population (2010)	Population (2017)	Pop Growth (2000 - 2017)	% Change (2000 - 2017)	Annual % Change
Clackamas County	338,391	375,992	399,962	61,571	18.2%	1.1%
Oregon City	25,754	31,859	35,483	9,729	37.8%	2.2%
Wilsonville	13,991	19,509	22,789	8,798	62.9%	3.7%
Happy Valley	4,519	13,903	18,477	13,958	308.9%	18.2%
Molalla	5,647	8,108	8,987	3,340	59.1%	3.5%
Sandy	5,385	9,570	10,581	5,196	96.5%	5.7%

Source: U.S. Census 2000 and 2010. ACS 2017 5-Year Estimates.

Title VI and Underrepresented Populations

The Title VI analysis presents information on the population count, racial/ethnic composition of the identified geographic areas, the English proficiency of the population, poverty status, age, and people with disabilities. Key findings are as follows:

- In 2017 the population of Clackamas County was estimated to be 399,962 people. The TriMet service area within Clackamas County contains 282,575 people, or 70.7% of the county population.
- Both Clackamas County as a whole and the TriMet service area within Clackamas County contain a slightly higher percentage of White people and a lower percentage of other races and ethnicities than the state of Oregon as a whole. In Clackamas County, 8.4% of residents identify as Hispanic/Latino and 4.1% identify as Asian.
- Within both the TriMet service area within Clackamas County and the county as a whole, approximately 88% of people speak only English, which is slightly higher than the state of Oregon's 84.8%. Of the 12.5% of the population who speak a language other than English, approximately 4.3% speak English less than very well, meaning they have limited English proficiency.

- In 2017 the median household income was \$80,033 in the TriMet service area within Clackamas County and \$72,408 in Clackamas County as a whole, both of which were higher than the Oregon median income of \$56,119. However, 9% of people in Clackamas County and 8.6% of people in the TriMet service area within Clackamas County earned at or below the Federal Poverty Level of \$24,600 for a family of four (2017 levels).
- The TriMet service area within Clackamas County and Clackamas County contain equivalent average percentages of people 65 years and older, at 16.5%. These percentages are similar to, but slightly higher than, the statewide percentage of 16.4%.
- People living with all types of disabilities make up 14.6% of Oregon's population. Disabilities measured in this statistic include vision, hearing, cognitive, ambulatory, self-care, and independent living difficulties. In the TriMet service area within Clackamas County, 32,900 people live with a disability, or 11.7% of the population. In Clackamas County as a whole, 47,004 people live with a disability, or 11.8% of the population.

Future Population Growth

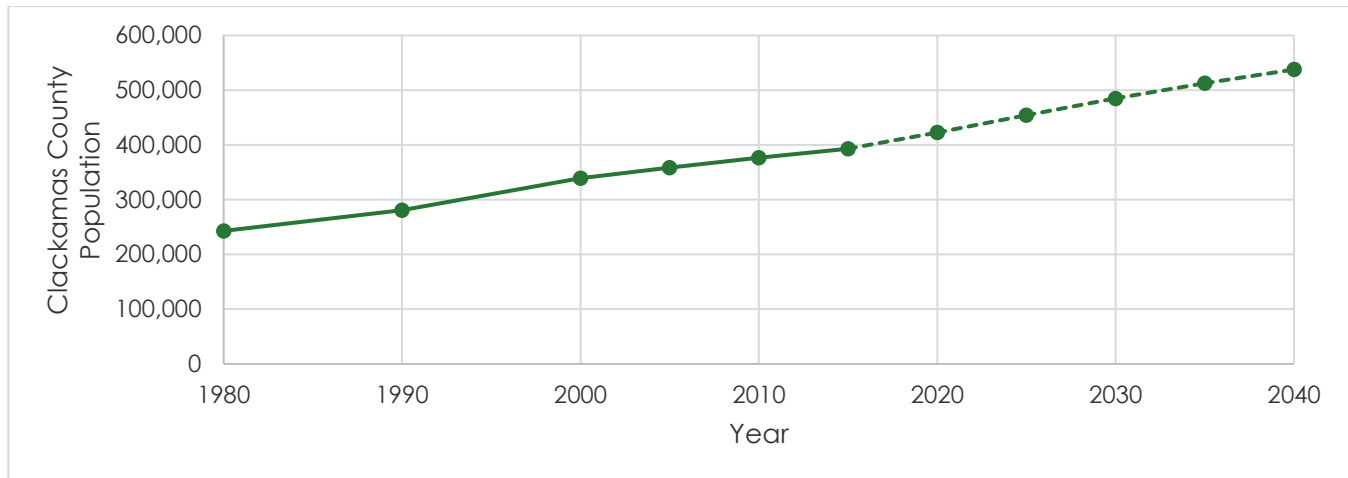
Future population and employment trends were examined to inform future transit needs. The sections below describe the forecasted future demographics of Clackamas County, based on the best current estimates of population and employment. The Oregon Department of Administrative Services, Office of Economic Analysis, develops and publishes county-level population forecasts based on historical trends that consider birth, death and migration rates.

Clackamas County's population grew 18% (from 339,299 to 399,962) from 2000 to 2017, corresponding to 1.1% average annual growth. Portland State University (PSU) forecasts an annual future growth rate through 2040 of close to 1.5% for Clackamas County (an increase of 141,981 persons). Table 17 and Figure 25 show how growth has occurred between 1980 and 2015 for Clackamas County, along with the future growth forecasted to 2040.

Table 17. Actual and Forecasted Populations of Clackamas County, 1980–2040

	Year	Clackamas County			
		Population	Change	Percent Change	Annual Growth Rate
U.S. Census Bureau Estimate	1980	241,919	-	-	-
	1990	278,850	36,931	15%	2%
	2000	338,391	59,541	21%	2%
	2005	358,301	19,910	6%	1%
	2010	375,992	17,691	5%	1%
	2015	389,438	13,446	4%	1%
PSU Forecast	2020	428,860	39,422	10%	2%
	2025	460,657	31,797	7%	1%
	2030	490,011	29,354	6%	1%
	2035	516,744	26,733	5%	1%
	2040	541,943	25,199	5%	1%

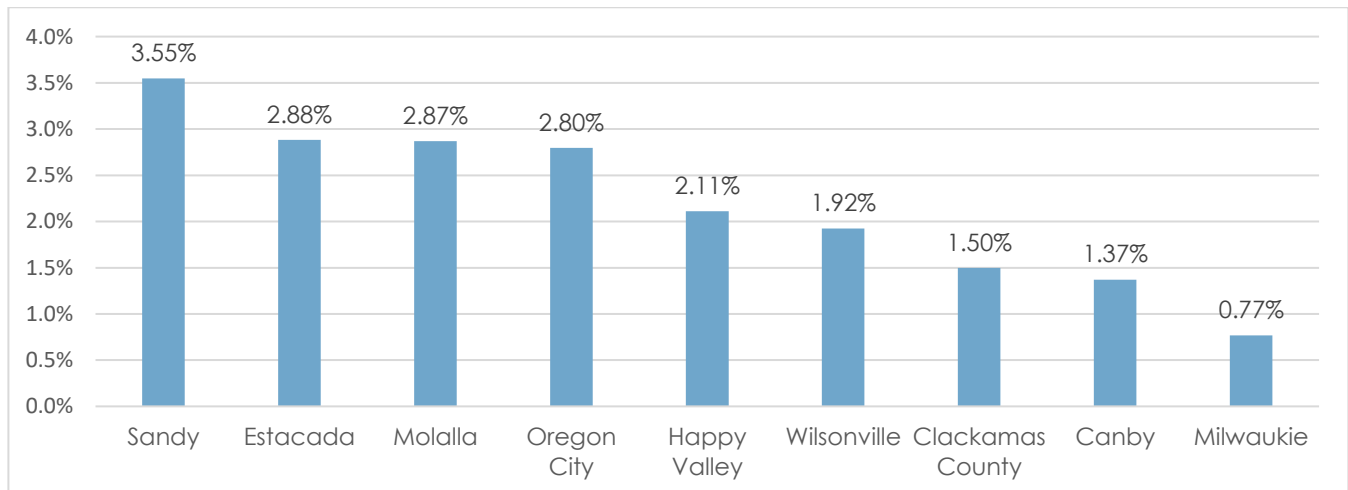
Figure 25. Clackamas County Population, 1980–2040



Source: *Current Forecast Summaries*, PSU Population Research Center. Accessed March 13, 2020. <https://www.pdx.edu/prc/current-documents-and-presentations>.

Figure 26 compares population and household growth projections for Clackamas County and its cities. Growth rates for Clackamas County and cities outside of the Portland metropolitan UGB used 2010 Census populations and projected 2035 populations from PSU's Population Research Center. Oregon City, Wilsonville and Milwaukie growth rates were calculated using household data, because those cities' transportation system plans did not report future population estimates. As shown, Sandy, Estacada, Molalla and Oregon City are forecast to be some of the fastest-growing cities in the County. Future growth is anticipated to increase transit demand.

Figure 26. Future Population Growth Within and Nearby Clackamas County



Note: Happy Valley's future population growth estimate was taken from an established study area for 2005 and 2040 as identified in the Happy Valley TSP. Growth rates were calculated using a simple growth rate, rather than compound.

Jobs and Employment

The following sections describe employment and commuting patterns for Clackamas County and for several cities within Clackamas County. This information is largely based on Longitudinal Employer-Household Dynamics (LEHD) employment data from the U.S. Census Bureau. This dataset provides valuable information about where workers live and work.

Since this dataset is generated based on administrative records, some work locations may be over- or underrepresented. For example, if workers in Portland have their paychecks processed with an address in Salem, their job site may be shown in Salem instead of Portland, if no local address is given in the administrative data. All data in this section are from 2017, which is the most recent year with complete data.

Key findings include:

- Portland is the most common destination for employed county residents.
- Portland is also the most common home location for employees working in Clackamas County.
- Four of the top 10 locations for employed county residents are cities in Washington County.
- Just over half of all employed Clackamas County residents and employees in Clackamas County commute 10 miles or less to reach work.

Detailed information about commutes is provided in Appendix C.

Clackamas County

In 2017, approximately 178,944 employed persons lived in Clackamas County.

- Nearly one-third (31.8%) of these persons worked in Portland.
- Four of the top 10 employment destinations for employed persons living in Clackamas County were cities within the County: Oregon City, Lake Oswego, Wilsonville and Milwaukie.

In 2017, approximately 154,183 employees worked in Clackamas County.

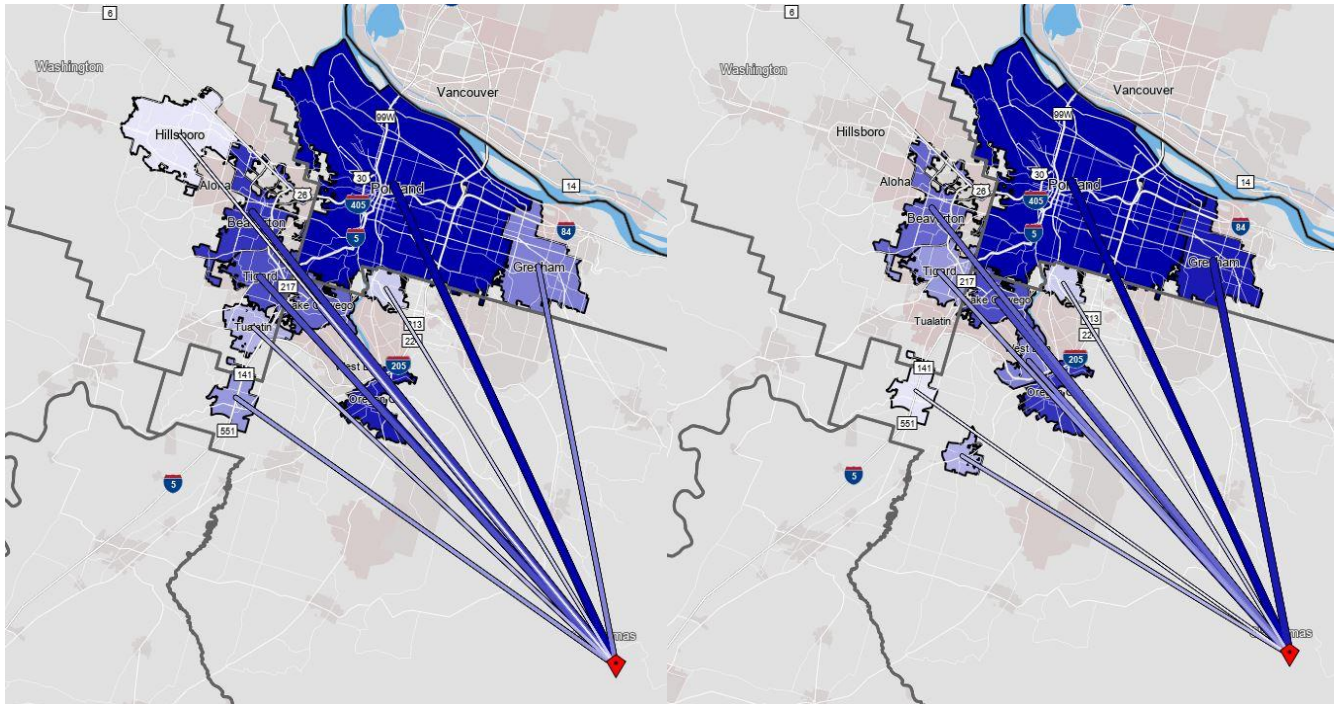
- The top two home locations for employees, Portland at 17.7% and Gresham at 4.3%, were outside Clackamas County.
- Five of the top 10 home locations for persons working in Clackamas County were outside the county.

Table 18 and Figure 27 show the primary home locations for employees in Clackamas County and work locations for employed persons living in Clackamas County.

Table 18. Employees Coming To and Going From Clackamas County

County Resident Work Locations	Count	Share	County Employee Home Locations	Count	Share
Portland	56,985	31.8%	Portland	27,295	17.7%
Oregon City	7,378	4.1%	Gresham	6,696	4.3%
Beaverton	7,305	4.1%	Oregon City	6,536	4.2%
Tigard	7,063	3.9%	Lake Oswego	4,032	2.6%
Lake Oswego	6,320	3.5%	Beaverton	3,759	2.4%
Gresham	6,001	3.4%	West Linn	3,616	2.3%
Wilsonville	5,381	3.0%	Tigard	3,377	2.2%
Tualatin	5,281	3.0%	Canby	3,347	2.2%
Milwaukie	5,224	2.9%	Milwaukie	3,036	2.0%
Hillsboro	4,253	2.4%	Wilsonville	3,034	2.0%
All Other Locations	67,753	37.9%	All Other Locations	89,455	58.0%

Figure 27. Map of Employees Leaving the County (Left) and Employees Entering the County (Right)



Note: Darker spokes and shading reflect which cities have the most commutes to and from these cities. The darkest city is the top commute location, while the lightest city is the tenth largest commute location.

As Table 19 shows, half of all employed persons who live in Clackamas County (51.2%) and employees who work in Clackamas County (53.5%) commute less than 10 miles from their home to work. Just over 15% of all employees who work in Clackamas County commute more than 25 miles to work, while 12.5% of employed persons who live in Clackamas County commute 25 miles or more.

Table 19. Distance to Work for Clackamas County Residents (left) and Clackamas County Employees (right)

Distance	Count	Share	Distance	Count	Share
Less than 10 mi	91,565	51.2%	Less than 10 mi	82,539	53.5%
10 to 24 mi	65,132	36.4%	10 to 24 mi	47,469	30.8%
25 to 50 mi	12,097	6.8%	25 to 50 mi	11,132	7.2%
Greater than 50 mi	10,150	5.7%	Greater than 50 mi	13,043	8.5%
Total	178,944	100%	Total	154,183	100%

As Table 20 shows, the most common time for employees who live in Clackamas County to leave for work is between 6:30 a.m. and 8 a.m. Providing transit during these times makes it a viable option for employee commutes.

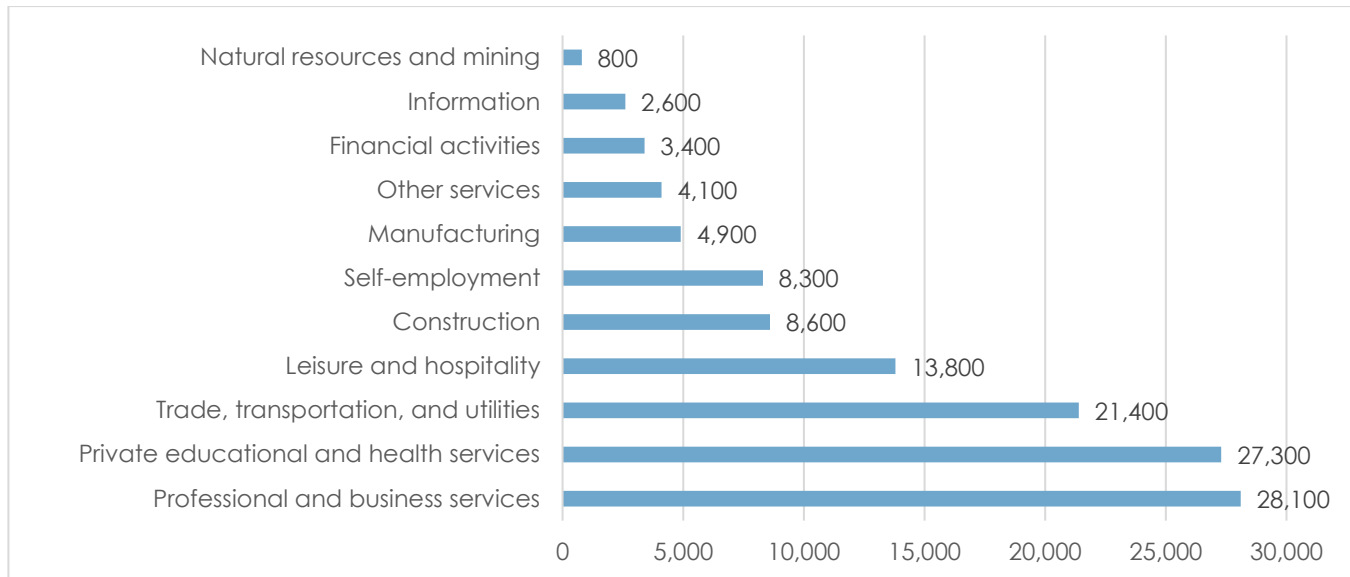
Table 20. Departure Time to Work for Clackamas County Residents

Time	Count	Share
12:00 a.m. to 4:59 a.m.	9707	5.1%
5:00 a.m. to 5:29 a.m.	8,707	4.2%
5:30 a.m. to 5:59 a.m.	10,201	5.4%
6:00 a.m. to 6:29 a.m.	17,035	9.0%
6:30 a.m. to 6:59 a.m.	21,118	11.2%
7:00 a.m. to 7:29 a.m.	27,632	14.6%
7:30 a.m. to 7:59 a.m.	20,893	11.1%
8:00 a.m. to 8:29 a.m.	16,095	9.0%
8:30 a.m. to 8:59 a.m.	8,439	4.5%
9:00 a.m. to 9:59 a.m.	10,591	5.6%
10:00 a.m. to 10:59 a.m.	5,181	2.7%
11:00 a.m. to 11:59 a.m.	2,925	1.5%
12:00 p.m. to 3:59 p.m.	10,243	5.4%
4:00 p.m. to 11:59 p.m.	9,749	5.2%
Total	188,856	100%

Employment Trends

The Oregon Employment Department, Workforce and Economic Research Division, publishes employment forecasts by industry. These 10-year forecasts are defined by regions (as opposed to counties or cities) and organize employment forecasts by primary industry. Clackamas County's region includes all of Clackamas County, Multnomah County and Washington County. These projections are for 2017-2027 and were developed prior to COVID-19.

It is expected that the largest employment increases will occur in the transportation, warehousing, and utilities (23%), building construction (21%), professional and technical services (21%), and private educational and health services (19%) sectors. An understanding of where faster-growing trade sectors and businesses are located (or could locate) allows for design of transit routes that can efficiently serve workers and employers. Net changes by industry in Figure 28 shows that professional and business services, private educational and health services, and trade, transportation and utilities are projected to add over 20,000 jobs in the next 10 years.

Figure 28. Portland Tri-County Area Employment Changes by Industry 2017–2027

Source: *Employment Projections by Industry and Occupation 2017–2027 Portland Tri-County Area (Clackamas, Multnomah, and Washington Counties)*. <https://www.qualityinfo.org/clackamas> Accessed February 27, 2020.

Land Use

Metro manages the Portland metropolitan UGB, and Metro partners with Clackamas County to establish urban and rural reserves within the County that could impact the Metro UGB. The cities of Gladstone, Happy Valley, Johnson City, Lake Oswego, Milwaukie, Oregon City, Rivergrove, West Linn and Wilsonville are within Metro's UGB.

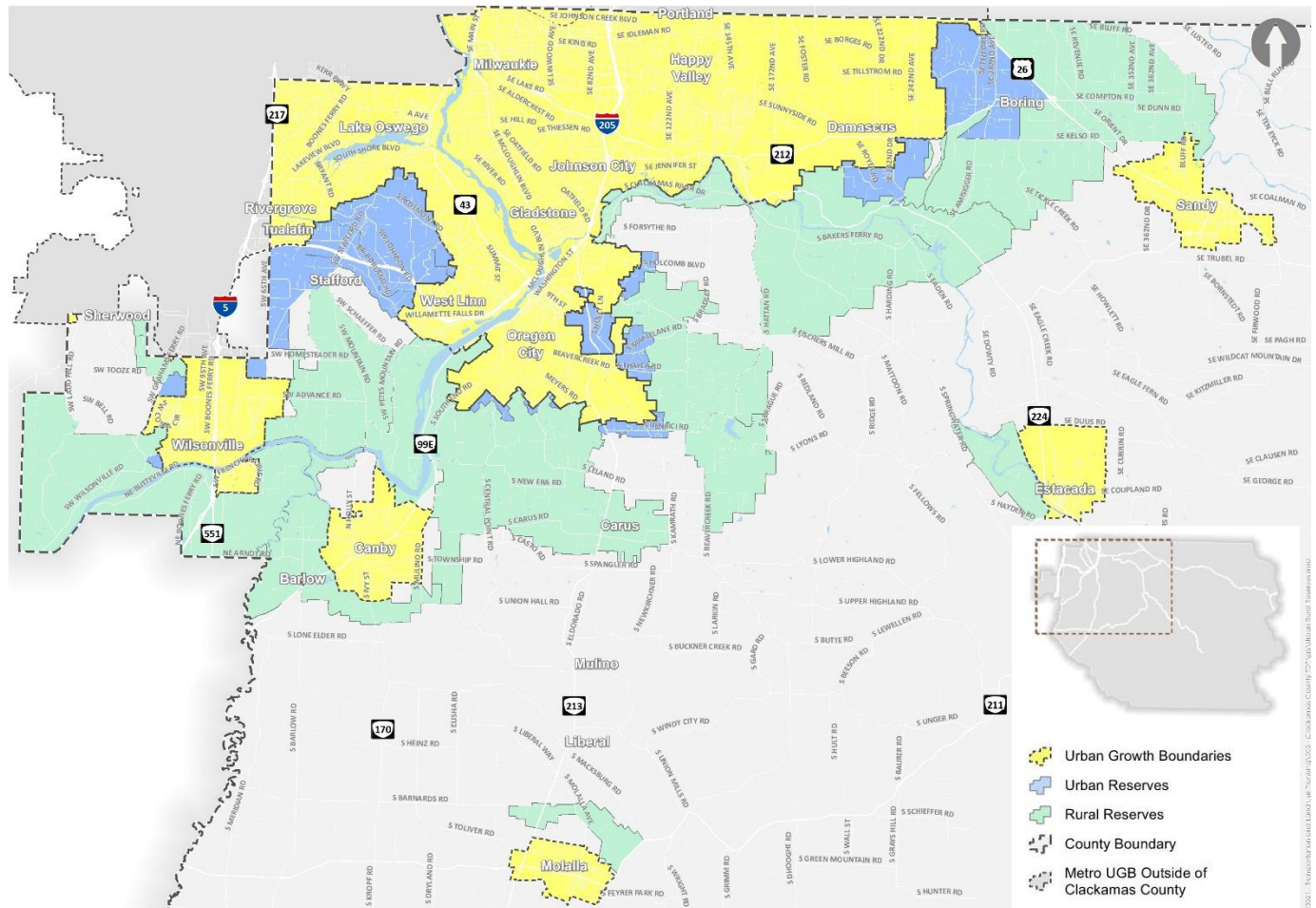
Land use growth is anticipated near Wilsonville/Stafford, Oregon City, and Damascus/Boring.

Urban reserves are lands suitable for accommodating urban development within the next 50 years, while rural reserves are lands protected from urbanization for the next 50 years. Figure 29 shows Clackamas County land inside Metro's UGB (yellow), land designated as urban reserve (blue), and land designated as rural reserve (green).

Within the Portland metropolitan UGB, there are a considerable number of locations where urban development may be suitable, as Figure 29 shows. These are broadly divided into four areas: Wilsonville, Stafford, Oregon City and Damascus/Boring.

- There are three small pockets of land bordering Wilsonville slated for future development: Grahams Ferry, Wilsonville Southwest, and Elligsen Road South.
- To the northeast of Wilsonville, the hamlet of Stafford and the surrounding unincorporated communities between Tualatin and West Linn are designated for urban development.
- Oregon City has five distinct areas to the south and east of the current city limits slated for urban development.
- There are two areas to the south and east of Happy Valley that are also slated for future urban development. These include an expansion of Damascus to the south of Highway 212 and the community of Boring along U.S. Highway 26.

Figure 29. Map of Metro's Urban and Rural Reserves for Clackamas County



Outside of the Portland metropolitan UGB, Canby and Estacada have set up urban renewal districts to encourage development. Canby's urban renewal district runs along Highway 99E and includes the industrial district east of Highway 99E and the Logging Road Trail. Estacada's urban renewal district is located downtown on both sides of Highway 211 to "encourage economic vitality and livability."

In 2017, the Oregon Department of Land Conservation and Development approved Sandy's application for a UGB expansion. The new UGB includes commercial-zoned land around the Highway 26/Orient Drive intersection, residential areas north and south of town, and new parkland by the Sandy River. The City maintains urban reserve land to the northwest and to the south of the new UGB.

The Clackamas County Transportation System Plan (TSP) identifies transportation infrastructure needs through the 20-year life of the plan.

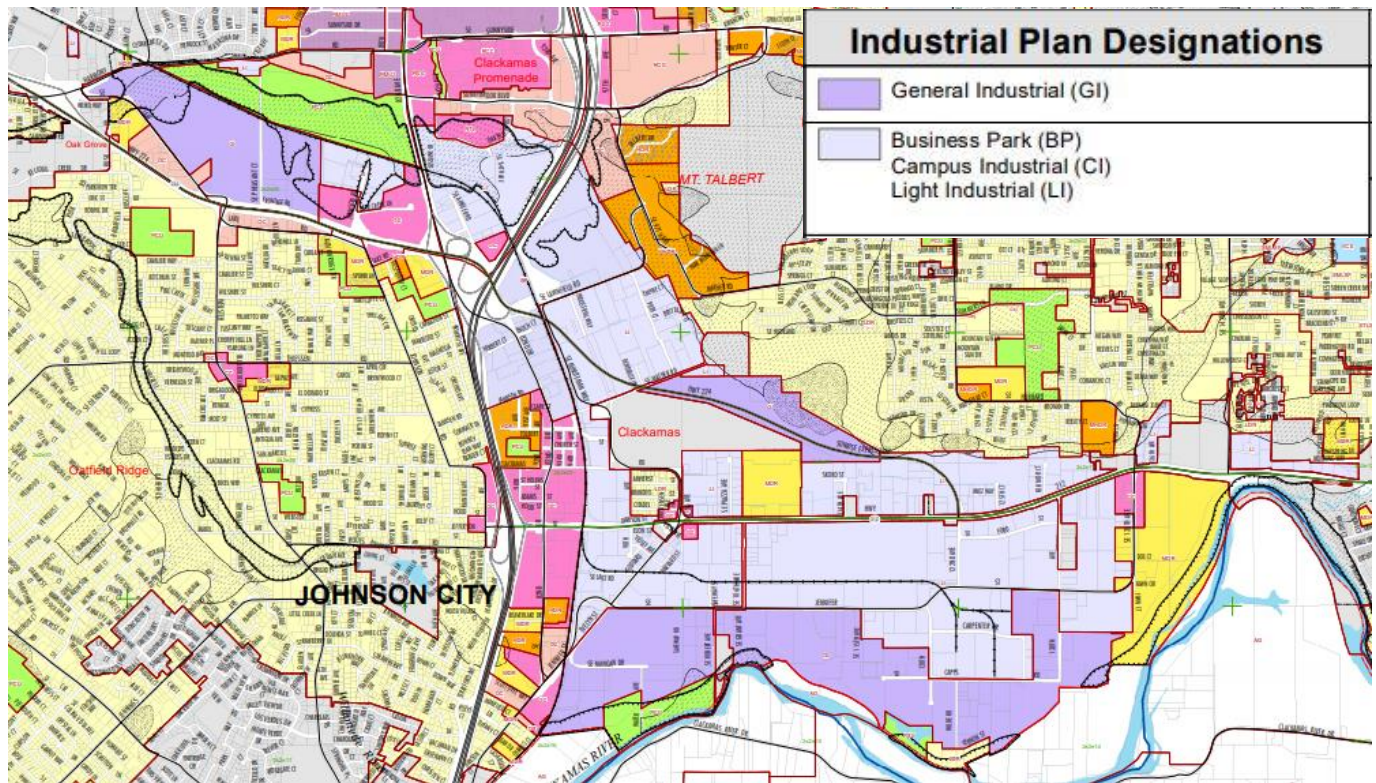
- There is a high density of capital projects around Clackamas Town Center, the Clackamas Industrial Area, and in Happy Valley, signaling future county growth.
- The unincorporated community of Stafford, which is inside an urban reserve, has several capital projects with improved roadway connections to Lake Oswego, West Linn and Wilsonville.
- Other investments include improved connections between Canby and Molalla, between Oregon City and Happy Valley, and between Estacada and Boring.

Other development considerations include the following:

- Rural hamlets are expected to remain relatively unchanged in the future, although individual uses such as the highway-oriented businesses in Mulino may expand.

- Within the Metro UGB, a significant amount of unincorporated land has been developed with a variety of uses, such as the Clackamas Industrial Area depicted in Figure 30.
- Additional development is expected to occur in accordance with the comprehensive plan and zoning designations of Clackamas County and Happy Valley.
- Additional industrial development is likely throughout much of the Clackamas Industrial Area, while continued commercial development is expected near I-205.

Figure 30. Clackamas Industrial Area Boundary



Source: Clackamas County – Comprehensive Plan Map 4-6: North Urban Area Land Use Plan

Travel Demand

Underserved corridors are corridors with little or no transit access. Even when public transit options do exist, these corridors are often not reasonably accessible by transit.

Table 21 describes service gaps between communities in Clackamas County. Travel demand (person-trips) from the statewide travel model (SWIM) are also included in the table to illustrate high-level overall travel demand between communities. This information is provided to help identify transit service gaps where there is likely high overall travel demand; those connections may be more viable for improved transit service. Increases to transit service and improved coordination can help to reduce travel times and make transit a competitive option for transportation.

Increases to transit service and improved coordination can help to reduce travel times and make transit a competitive option for transportation, especially for, Damascus–Gresham and Happy Valley–Gresham².

- Two connection pairs, Wilsonville–Canby and Happy Valley–Damascus, can be completed with no transfers and in less than one hour.
- The other two connection pairs, Damascus–Gresham and Happy Valley–Gresham³, both require two transfers and take 90 minutes or more to complete on transit. These two connections also service more person-trips than the two connections with direct transit service.

Table 21. Corridor Transit Service and Estimated Trip Demand

Origin	Destination	Existing Service	Roadway Mileage	Travel Info/Notes	Cost	Total person-trips (one-way)
Wilsonville	Canby	Transit Mode: 3X, South Metro Area Regional Transit (Bus) Walking: 2 Minute	7.9 Miles	Travel Time: 21 min Transfers: 0 Total Transfer Time: N/A	\$1.50	2,419
Damascus	Gresham	Transit Mode: 30, TriMet (Bus) MAX Green Line, TriMet (Light Rail) 2, TriMet (Bus)	8.6 Miles	Travel Time: 2 h 18 min Transfers: 2 Total Transfer Time: 23 min *Requires a 45 minute walk to Clackamas TC.	\$2.50	7,092
Happy Valley	Gresham	Transit Mode: 30, TriMet (Bus) 72, TriMet (Bus) 2, TriMet (Bus)	8.7 Miles	Travel Time: 1 h 29 min Transfers: 2 Total Transfer Time: 18 min	\$2.50	4,146
Happy Valley	Damascus	Transit Mode: 30, TriMet (Bus)	5.6 Miles	Travel Time: 49 min Transfers: 0 Total Transfer Time: N/A *Requires a 45 minute walk to Clackamas TC.	\$2.50	3,025

³ Primarily Carver area of Damascus and Happy Valley.

Outreach Findings

Public engagement is a part of every agency's planning efforts. Agencies conduct surveys, tabling events, and public meetings, among other methods, to gather public input on how to make new investments. This section summarizes public engagement findings for each transit agency in Clackamas County from prior planning efforts. Key findings include:

- In Canby, more than half all survey respondents would prefer that CAT invest in transit service to other cities over implementing a local circulator route. CAT also found that additional service to Oregon City was popular. Adding service to Woodburn differed based on language: about 15% of English speakers identified this option as a priority, while about 50% of Spanish speakers did so.
- In Sandy, respondents at stakeholder meetings and in surveys generally supported additional regional service for SAM. When looking at potential transit improvements, respondents supported additional weekend service to Gresham and a new route to Clackamas Town Center.
- In Molalla, several potential new services for SCTD were identified (Woodburn, Silverton, Estacada, commuter service, on-demand shuttle service). Of these options, direct service to Woodburn was the highest priority from existing riders. Commuter service to employment areas was the highest priority for non-riders.
- In Wilsonville, workshop and survey respondents were more likely to support an increased focus on inter-city bus service.

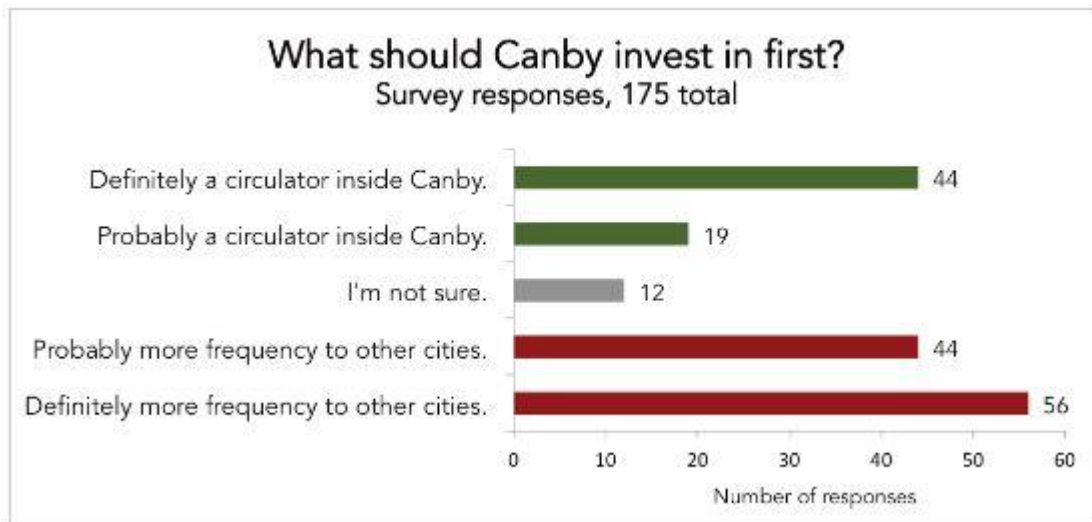
Clackamas County Housing Authority

Clackamas County Housing Authority's Local Implementation strategy for the Metro Affordable Housing Bond. Several findings centered on transit:

- The need for improved countywide access to multimodal transportation systems, especially in the more rural areas, but also increased connectivity between rural and urban areas.
- For affordable housing investments to be successful, there needs to be countywide public transportation.
- Summaries from the Wichita Center event in Milwaukie lifted frequent bus service and accessible transit stations to the top of the list of community needs.

CAT

CAT's most recent public engagement primarily revolved around whether to invest in a circulator route in Canby or to increase service to other cities. As Figure 31 shows, more than half of all survey respondents would prefer that CAT invest in transit service to other cities over implementing a local circulator route.

Figure 31. Questionnaire from CAT's Public Engagement Survey Regarding Transit Investments

CAT also collected free-form comments from the community. Common themes included adding weekend service, adding additional service (weekday and weekend) to Oregon City, and improved service frequency.

There is a sizable Spanish-speaking population in Canby. CAT asked both English and Spanish speakers what is most important to include if more funding for transit service is available. Of the 10 options available, both groups stated that adding Saturday service is their top priority (around 60% for English speakers and around 80% for Spanish speakers). Both groups also supported adding a local circulator route and adding Sunday service. The biggest difference was around providing service to Woodburn: about 15% of English speakers identified this option as a priority, while about 50% of Spanish speakers did so.

SAM

SAM recently completed a draft Transit Master Plan. The primary outreach methods included the project Stakeholder Advisory Group, an online survey, and a paper survey. SAM asked four questions across each outreach method:

- *More local or more regional service?* The Stakeholder Advisory Group overwhelmingly supported additional regional service. The two survey groups supported regional service as well, but the split between regional and local service was much narrower.
- *Compete for more riders, or get a little service close to everyone?* On this question, the results were mixed. The Stakeholder Advisory Group and the paper survey respondents narrowly supported service based on getting more riders, while online survey respondents supported extending service to be closer to everyone.
- *Design for shorter walks or shorter waits?* Both types of survey respondents preferred a transit network that minimized waiting over minimized walking to a transit stop. Just about 30% of all survey respondents had no preference between shorter walks to transit or shorter waits for transit.
- *Investment priorities?* Survey respondents had eight options to choose from, and both online and paper survey respondents chose "higher frequency" and "cover more places" as a top-three priority. As the remaining top-three item, online respondents valued "Saturday service," while paper respondents valued "Night service."

- *Add new service?* Respondents were presented with hypothetical transit improvements, including service to Mt. Hood Community College, additional weekend service to Gresham, Sunday service to Estacada, or a new route to Boring, Damascus and Clackamas Town Center. Additional weekend service to Gresham and a new route to Clackamas Town Center received broad support.

SCTD

Key findings from the SCTD outreach efforts are as follows:

- Molalla City Loop riders indicated that adding Sunday service and later evening service hours are higher priorities on their route.
- Canby riders indicated that Saturday service and later evening service hours are higher priorities on their route.
- Existing CCC riders indicated that later evening service, adding Sunday service, and increased frequency during commute hours are higher priorities on their route.
- Of potential new services (Woodburn, Silverton, Estacada, commuter service, on-demand shuttle service), direct service to Woodburn was the highest priority from existing riders. Commuter service to employment areas was the highest priority for non-riders.
- Riders and non-riders ranked bus stop improvements and an online/mobile trip planning tool as high priorities.
- Real-time vehicle arrival information also ranked high, and it is possible those wanting a trip planning tool also want this feature.
- When asked which areas needed improvements first, respondents indicated:
 - ◆ New services as the highest priority, followed by
 - ◆ Bus stop improvements and crosswalks, and
 - ◆ Information and technology (trip planning tools, real-time vehicle arrival, different fare payment options).

SMART

As part of their 2017 Transit Master Plan, SMART undertook a comprehensive public outreach plan to understand issues and opportunities for the transit system and to identify service alternatives. SMART conducted community workshops and surveys to understand the values of people who live, work, or play in Wilsonville.

Across these workshops and surveys, SMART asked the community three questions:

- *Should SMART focus on inter-city service or service within Wilsonville?* Respondents were more likely to support an increased focus on inter-city bus service.
- *Should SMART focus on rush-hour service or all-day, all-week service?* The community broadly supports all-day, all-week SMART service over a focus on rush-hour service.
- *How should SMART balance maximizing ridership and providing coverage? Should the focus be on service frequency or decreased walking distance to a bus stop?* A plurality of respondents told SMART that their current balance is adequate, while the remaining respondents were much more likely to support frequency over walking distance.

TriMet

As TriMet created its Public Transportation Improvement Plan, the agency conducted public engagement on some of the broader themes. These included near-unanimity on initiatives such as using electric buses and establishing a low-income reduced fare program. There was less unanimity over whether to promote a youth pass program at the expense of other priorities. TriMet's Public Transportation Improvement Plan public engagement findings did not include specific recommendations for Clackamas County or for service within the county.

TriMet's Unified Service Enhancement Plan lays out a 20-year plan for expanding bus service across TriMet's service area. An increased payroll tax would boost revenue coming to TriMet, so the agency created five subarea plans that outlined future expansion plans and sent the proposals to TriMet's Board of Directors for approval. The Service Enhancement Plan was informed by public comment, demographic and trip pattern data, and jurisdictional redevelopment plans. The Service Enhancement Plan is split into five regions, with Clackamas County fully located within the "Southeast" area of the plan. The goals of the Southeast area plan is to increase quality of life, plan for a growing region, and provide more connections between cities in the TriMet service area.

Background Policy Documents

Goals and policies from the following plans were reviewed in preparing draft goals and policies for the TDP:

- Clackamas County Transportation System Plan (2013)
- Clackamas County Active Transportation Plan (2015)
- Clackamas County Mt. Hood Service Implementation Plan (2016)
- Clackamas County Adopted Budget Fiscal Year 2019–20 (2018)
- Blueprint for a Healthy Clackamas County (2018)
- Clackamas County Housing & Community Development Action Plan (2019)
- Oregon Public Transportation Plan (2018)
- Metro Regional Transportation Plan (2018)
- Metro Regional Transit Strategy (2018)
- TriMet Unified Service Enhancement Plan (2018, summarized in the previous section)
- TriMet Public Transportation Improvement Plan (2018)
- TriMet Coordinated Transportation Plan for Seniors & Persons with Disabilities (2016)
- CAT Transit Master Plan (2017)
- SMART Transit Master Plan (2017)
- SCTD Transit Development and Master Plan (2020)
- Sandy Area Metro

A summary of the goals and policies for background are presented below.

Clackamas County Transportation System Plan (TSP)

Clackamas County's TSP guides countywide transportation investments for the 20-year planning timeframe. The TSP envisions a well-maintained system for moving people and goods across the diverse regions in the County that meets future needs and land use planning. Goals include providing a transportation system that benefits the environment and the economy, encourages economic growth,

suits diverse community needs, promotes health and safety, is equitable, and is cost-effective for the County. The TSP identifies the following policies specific to transit:

- Identify existing transit deficiencies and needed improvements;
- Emphasize roadway improvements that will ensure reliable service, especially on east–west routes, and improve connections between housing and industrial/commercial areas;
- Require developments and road construction projects along transit routes to construct shelters with pedestrian access;
- Promote park-and-ride lots and pedestrian/bicycle connections to transit;
- Within the Portland metropolitan area, set a goal to have transit service within one-quarter of a mile of most residences and businesses; and
- Focus safety improvements along rural routes near transit stops.

Clackamas County Active Transportation Plan (ATP)

Clackamas County's ATP identified key active transportation routes connecting communities with destinations in the County. The plan's vision emphasizes an interconnected, safe, and equitable active transportation network for people across the County. The plan's goals are to:

- build a network of multi-use paths, bikeways, and walkways;
- enhance connections to significant County destinations;
- build a network to promote tourism;
- create a safe network for people of all ages, abilities, and incomes; and
- build a network that will allow people to improve their health.

The vision and goals, an existing conditions summary and public involvement led to 24 active transportation routes across the county, several of which would provide connections to existing high-capacity transit infrastructure.

Clackamas County Mt. Hood Service Implementation Plan

Clackamas County's Mt. Hood Service Implementation Plan identifies a funding plan to make permanent the expanded Mt. Hood Express service from Sandy to Timberline Lodge as well as further expansion of service on and around Mt. Hood. Existing service from Sandy to Rhododendron was financed with a Federal Lands Access Program (FLAP) grant, and the purpose of this plan was to identify long-term transit routes that would service the Mt. Hood area with a sustainable funding source.

Clackamas County Adopted Budget Fiscal Year 2019–20

Clackamas County's Adopted Budget for Fiscal Year 2019–20 provides a countywide budget for the upcoming year. The budget's core values are service, professionalism, integrity, respect, individual accountability, and trust (SPIRIT), which County officials work to embody every day on the job. The budget was crafted to ensure oversight for resources in the General Fund, a reformed process for internal service delivery with technology, reserve funds for bond ratings and PERS rate increase, and replacement of the financial and human resources information system. The County has recognized that revenues are increasing, but costs are increasing at an even faster rate.

The County's Adopted Budget was in-place prior to COVID-19 and funding impacts are not included herein. The County Department of Transportation and Development generally has cuts in operating revenue. The transportation engineering and construction program and transportation maintenance program expect a decrease in revenues and budget while the traffic safety program expects an

increase. The budget changes indicate that using existing facilities more efficiently and getting people safely to transit continue to be of high importance to the County.

Blueprint for a Healthy Clackamas County

The community health improvement plan for Clackamas County, The Blueprint for a Healthy Clackamas County, identifies three top health priority areas: Access to Care, Culture of Health, and Healthy Behaviors. The plan outlines objectives, strategies, and tactics within each priority area to address root causes of health disparities and improve health outcomes. Guiding principles for this work include applying a health equity lens, using a trauma-informed approach, and assessing health across the lifespan. Transportation systems, accessibility and affordability intersect with all three of the priority areas.. The Access to Care priority area explicitly establishes a goal to “improve physical environments and access to transportation” . This goal focuses on equitable access to transportation options, including an expansion of the Transportation Reaching People program (a shared-ride service for residents over 60 years of age or who have a disability), a plan to incorporate health and safety impact reviews for transportation infrastructure projects, and working with public transit agencies to examine health, safety, and equity as part of their strategic plans.

Clackamas County Housing & Community Development Action Plan

Clackamas County's Housing & Community Development Action Plan identifies needs and resources for affordable housing development, as well as future projects for affordable housing construction. The plan's goals include increasing affordable housing supply and overall housing units, providing housing rehabilitation and homeless assistance, and improving public services and public facilities that support people who are seeking housing. The plan identifies 16 programs totaling nearly \$3.3 million, much of which is from a Community Development Block Grant from the Federal Department of Housing and Urban Development. These programs will help meet the goals outlined in this plan.

Oregon Public Transportation Plan

The Oregon Public Transportation Plan (OPTP) goals and policies provide current and comprehensive direction regarding transit planning and practices. The OPTP goals and policies are extensive, organized around ideas of mobility, accessibility, community livability and vitality, equity, safety, health, sustainability, strategic investment, and coordination and collaboration. Key themes in OPTP policies include reliable and accessible transit service and transit information; increasing coordination with other transit and transportation services; healthy options including safe active-transportation means of accessing transit, access to health-supporting destinations, and reducing pollution; and greater coordination and collaboration with other public agencies (e.g., for land use planning and permitting) and new partners who can help broaden and innovate transit's effectiveness.

Metro Regional Transportation Plan

Metro's 2018 Regional Transportation Plan (RTP) sets regionwide policy for transportation investments and establishes a list of future transportation projects. The RTP's vision is focused on maintaining the region's quality of life while promoting equitable economic outcomes on a transportation system that is safe, reliable, healthy, and affordable. The RTP's 11 goals build upon the overarching themes in the vision statement. The first two goals promote community and prosperity, pillars in the broader vision to maintain a quality of life. The third goal identifies transportation choices regionwide as being important. The next four goals promote reliability, safety, and health for residents and for the environment. The next two goals around climate leadership and equity set big goals to change transportation's historic role. The final two goals center on accountability for fiscal stewardship and transparency.

Metro Regional Transit Strategy

Metro's Regional Transit Strategy sets a regionwide transit policy and provides a framework for implementing the 2040 Growth Concept. The regional transit vision is based on four pillars: making transit more frequent, more convenient and competitive with driving, more accessible to all users, and more affordable. This vision will be implemented with transit service improvements, capital investments in transit, and transit-supportive elements. Eight policies will be adopted to help implement the regional transit vision. These policies put equity at the center of building a seamless transit network, maintaining existing transit investments, increasing frequency and convenience, improving bicycle and pedestrian access to transit, and improving intercity transit service. Policies around equity and maintenance are new to this version of the regional transit strategy, while the goal around pedestrian and bicycle access has been revised to include new mobility services.

TriMet Public Transportation Improvement Plan

TriMet's Public Transportation Improvement Plan satisfies the requirement from House Bill 2017 – the Keep Oregon Moving Act – for TriMet to be a Qualified Entity to disburse Statewide Transportation Improvement Fund (STIF) money to Multnomah, Washington, and Clackamas counties. As required by law, this plan also identifies how TriMet will address needs for people living within the service area, as well as serve communities with a high percentage of low-income residents. HB 2017's Transit Advisory Committee set guiding principles for this plan to follow: work to reduce transit fare for people in low-income households, add buses powered by natural gas or electricity, plan capital projects that help low-income communities, expand transit services to communities outside of TriMet's service district but within the tri-county area, and improve regional coordination between TriMet and communities outside of TriMet's service district.

TriMet Coordinated Transportation Plan for Seniors & Persons with Disabilities

TriMet's Coordinated Transportation Plan for Seniors & Persons with Disabilities guides transportation investments to a wide range of transportation options for people who may have difficulty using TriMet's fixed-route network. While the plan's stated priorities primarily inform project selection and implementation, the vision and principles provide more overarching transit planning and implementation guidance. The vision statement emphasizes investments that facilitate options, independence, and community connections for seniors and people with disabilities. This plan distinguishes between transit service needs and coordination needs. Transit service needs, where service could be extended or improved, include first- and last-mile service, reducing geographic service gaps, meeting unmet medical needs, and improving transit service in areas where coverage exists. Coordination needs, which describes how transit agencies and social service providers can better work together, include regular meetings between these agencies and providers, co-operative programs with retirement communities, acceptance of other paratransit providers, and strengthening partnerships.

CAT Transit Master Plan

Canby's Transit Master Plan provides a framework for how to invest in transit improvements if or when additional funding from HB 2017 becomes available. The plan has no stated vision or goals in a traditional sense; instead, it asks the community a central question about transit service: should CAT add more frequency to Route 99 or add a local circulator in Canby first?

SMART Transit Master Plan

SMART's Transit Master Plan examines future transportation and mobility needs for the City of Wilsonville and how those needs can be met through a transit system. The plan's vision is to "provide convenient, safe, reliable, efficient, fiscally responsible and friendly transportation services to anyone who wants or needs those services in Wilsonville." The goals that inform this vision include increasing public knowledge of transit, improving service quality, improving access, expanding transit service, increasing efficiency and improving air quality, and fostering community ownership.

SCTD Transit Development and Master Plan

SCTD's Transit Development and Master Plan identifies a mission statement, four goal areas, and related goal policies. SCTD's mission statement is to "provide safe, accessible, convenient, reliable, and efficient transit service that meets the needs of the community we serve." Goal areas are customer experience, accessibility, connectivity and coordination, and sustainability (economic, environment, and equity).

SAM Transit Master Plan

SAM's Transit Master Plan has two goals and seven policies that are derived from the Oregon Public Transportation Plan and community input. The two goals are to provide effective, safe, and equitable transit service for everyone who live in or comes to Sandy, and to create an alternative transportation network to the private automobile. Policies include providing safe and comfortable service, collaborating with other transportation agencies for smooth connections, increasing service with increasing population, improving accessibility, increasing awareness of SAM, being fiscally responsible, and reducing air pollution and energy use. Each policy has a set of actions that are provide measurable targets for meeting the plan's policies.

Planned Service Improvements

Several background documents detail planned transit service improvements or transportation improvements that impact access to transit. The following section identifies planned transit and transportation improvements with substantial impacts to the transit network in Clackamas County. These do not include all improvements identified in each document.

Clackamas County Active Transportation Plan

The county's Active Transportation Plan identifies 24 principal, connector, and ideal active transportation routes across the county. Five of these routes provide direct connections to existing high-capacity transit in Clackamas County.

- **Route P4 – I-205 Multi-Use Path:** Fills in a gap and improves path facilities between Gladstone and Clackamas Town Center, improving connections to the MAX Green Line.
- **Route P5 – Monroe Neighborhood Greenway:** A low-speed, low-volume east–west street connecting Milwaukie with Clackamas Town Center to provide access to the MAX Orange and Green lines.
- **Route P6 – Linwood Avenue:** This connection from Clackamas Town Center north to the Springwater Corridor will connect a major regional active transportation facility to the MAX Green Line.

- **Route P7 – River Road:** A north–south connection from Oregon City along River Road to Milwaukie will provide access to the MAX Orange Line, as well as TriMet Route 99 on McLoughlin Boulevard, which provides weekday rush-hour frequent service between Oregon City and Portland City Center.
- **Route C-22 – King Road:** This project connects the Trolley Trail and downtown Milwaukie with Clackamas Town Center along Harrison Street and King Road. Not only will this connecting route provide access to the MAX Orange and Green lines, but it will also provide access to TriMet Route 33, a frequent service line, which runs along the length of Harrison Street and King Road.

Clackamas County Mt. Hood Service Implementation Plan

This plan envisions expanded service connecting to Mt. Hood:

- Future service between Hood River and Mt. Hood Meadows/Timberline Lodge, as well as Warm Springs and Timberline;
- A future circulator route serving Mt. Hood Meadows, Government Camp, and Timberline Lodge; and
- The establishment of a new transportation district.

Clackamas County Housing & Community Development Action Plan

This plan identifies 16 housing-related projects totaling nearly \$3.3 million countywide. The plan includes:

- Construction of tiny homes, cottage clusters, transitional housing units, and multifamily units; and
- Housing assistance through rental assistance programs and a new emergency shelter.

Metro Regional Transit Strategy

Metro's Regional Transit Strategy is a high-level visioning and strategy document for transit across the region. Two specific transit projects related to Clackamas County are included:

- The Portland to Lake Oswego streetcar project was moved from under development to a future high-capacity transit project; and
- A bus route from Clackamas Town Center to Happy Valley and Damascus via the Columbia to Clackamas Corridor became a future high-capacity transit project.

In addition, Metro's 2009 High Capacity Transit System Plan map prioritized high capacity transit corridors by readiness. Several Clackamas County Corridors were identified, including:

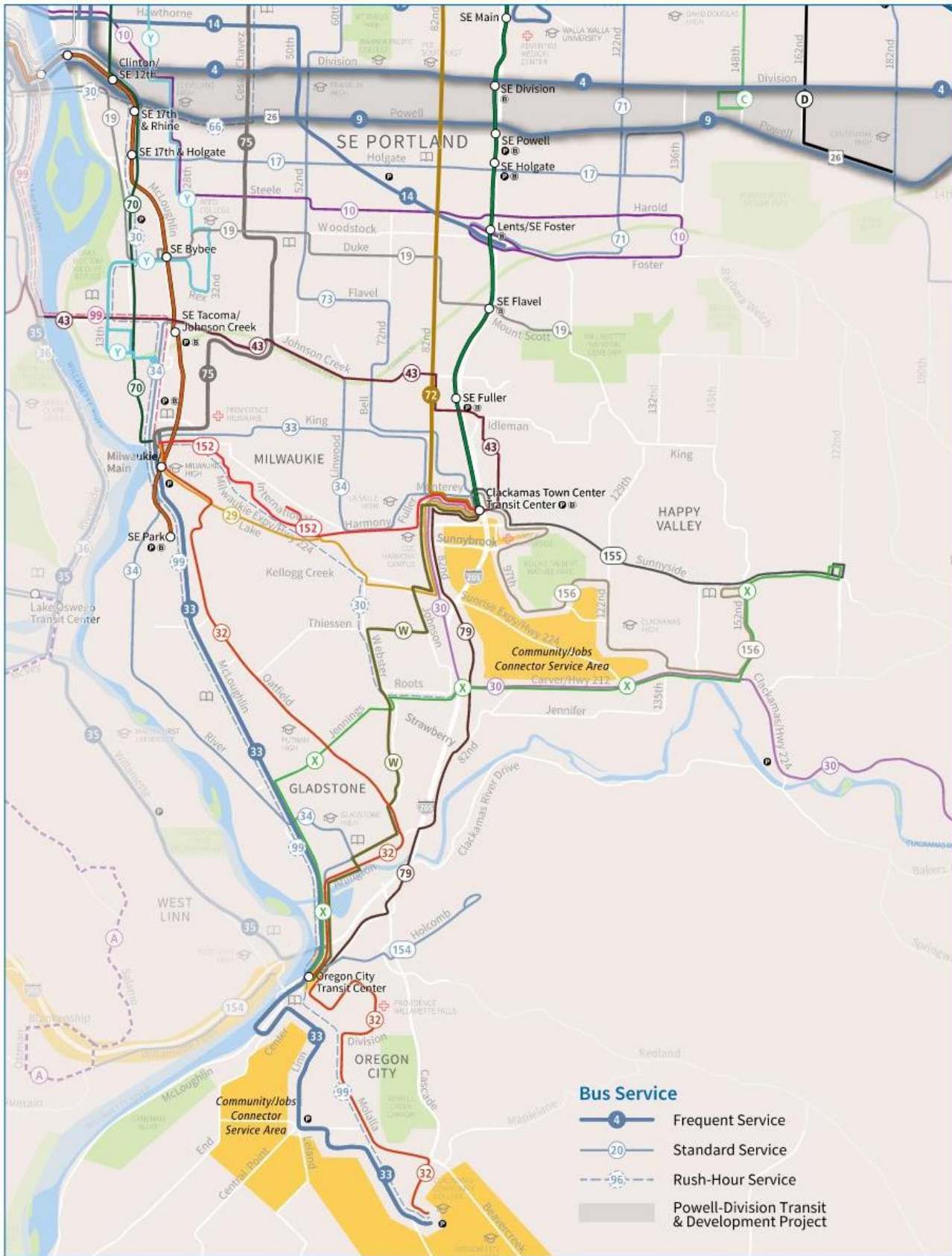
- Milwaukie to Oregon City (Highway 99) – “Next Phase Regional Priority Corridor”
- Oregon City to Tualatin (Interstate 205) – “Next Phase Regional Priority Corridor”
- Milwaukie to Lake Oswego to Interstate 5/Highway 217 interchange – “Next Phase Regional Priority Corridor”
- Clackamas Town Center to Oregon City (Interstate 205) – “Next Phase Regional Priority Corridor”
- Milwaukie to Clackamas Town Center (OR 224) – “Next Phase Regional Priority Corridor”
- Clackamas Town Center to Damascus to Gresham – “Regional Vision Corridor”

TriMet Unified Service Enhancement Plan

Within the Southeast section of TriMet's Service Enhancement Plan, the following general improvements have been outlined for Clackamas County:

- Additional east–west bus service across Clackamas County, specifically to connect Happy Valley to Highway 212 and Oregon City;
- Use of shuttles to increase access to jobs, specifically to the Milwaukie and Clackamas industrial areas, and to education, including Clackamas Community College (planning efforts funded by STIF); and
- Improve frequency and extend service to a variety of locations across Clackamas County within TriMet's service area.
- Figure 32 below provides a map from TriMet's Service Enhancement Plan showing existing and future transit improvements within the Southeast area of the region:
 - ◆ Deviated-route or demand-responsive community/jobs connectors in the Clackamas Industrial Area and southern Oregon City (operations funded by STIF);
 - ◆ A new route (shown as "W" in the figure) connecting Clackamas Town Center, Gladstone, and Oregon City via Webster Road; and
 - ◆ A new route (shown as "X" in the figure) connecting Happy Valley to Gladstone and Oregon City via Highway 212.

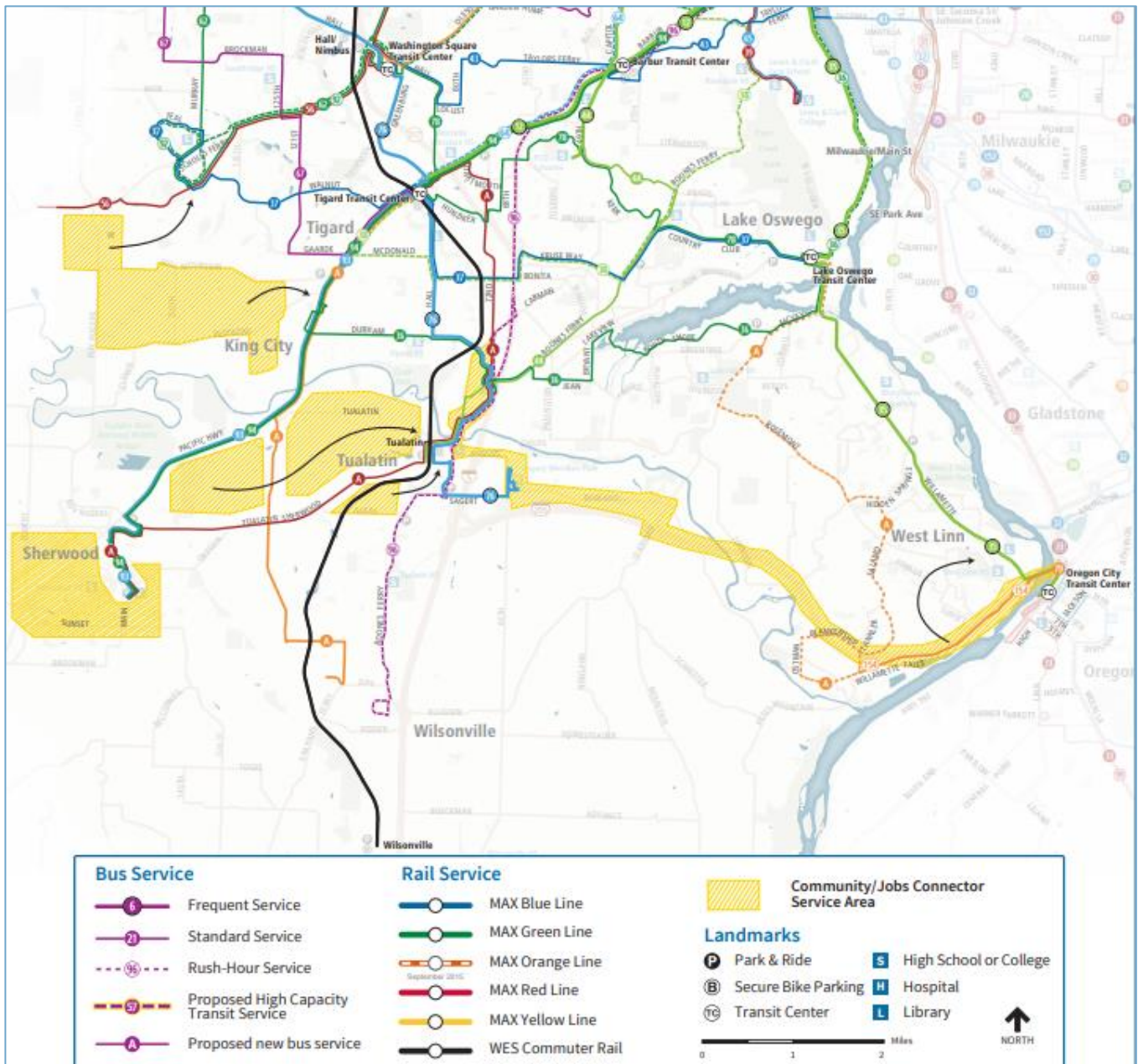
Figure 32. Map of Future Transit Service in TriMet's Service Enhancement Plan – Southeast



Within the Southwest section of TriMet's Service Enhancement Plan, the following general improvements have been outlined for Clackamas County:

- Additional east-west service between Clackamas County and Washington County, including extended service on lines 36 and 37 from Lake Oswego into Washington County and a potential community/jobs service area connection between Oregon City, West Linn, and Tualatin (planning funded by STIF).
- New service between West Linn's Willamette commercial area, West Linn City Hall, and Lake Oswego running west of Highway 43.
- The planned Southwest Corridor light rail line that will terminate at Bridgeport Village, just west of the county line.

Figure 33. Map of Future Transit Service in TriMet's Service Enhancement Plan – Southwest



TriMet Public Transportation Improvement Plan

As a STIF provider, TriMet is responsible for distributing state transit funds across the county, including to areas outside of TriMet's service district. These planned improvements include:

- Streamlined TriMet bus service and a new bus route connecting Oregon City, Gladstone, and Clackamas Town Center;
- Expanded, enhanced, and new service, along with technological improvements for all other transit providers in the County; and
- Capital improvements, including fleet upgrades, new software, and bus stop amenities for all other transit providers in the County.

CAT Transit Master Plan

CAT's Transit Master Plan frames transit service as a series of choices and tradeoffs. Based on community feedback, the following improvements will be prioritized when additional funding becomes available:

- Increase frequency on Route 99X, providing service to Oregon City northbound and to Woodburn southbound;
- Add weekend service on Route 99X; and
- Alternatively to the above, add a local circulator route in Canby.

SMART Transit Master Plan

SMART's Transit Master Plan includes several potential service changes:

- Rerouting the 2X bus service to Tigard Transit Center instead of Barbur Transit Center;
- Creating one line each to serve Canby and Charbonneau instead of combined service on one line (now implemented); and
- Streamlined and expanded service on several lines within Wilsonville.

SCTD Transit Development and Master Plan

SCTD's Transit Development and Master Plan includes several potential service enhancements:

- Expanded service hours, increased frequency, and Saturday service on all existing routes (Molalla City Loop, Molalla to Canby, Molalla to CCC);
- Sunday service on the Molalla to CCC route;
- A new Molalla to Woodburn route;
- Technology and facility improvements such as real-time vehicle arrival information and passenger counters, bus stop improvements, and low-floor vehicles; and
- Fare payment considerations, which are also being studied by Clackamas County's small transit entities (SCTD, SAM, CAT, SMART) as part of a STIF-funded project.

SAM Transit Master Plan

SAM's Transit Master Plan identifies three potential service enhancements:

- Adding a new shopping shuttle or extending an existing shopping shuttle to the Sandy Vista Apartments east of downtown along Highway 26;
- Adding additional weekend service on the Gresham–Sandy bus route; and

- Adding a new route that connects Sandy with Boring, Damascus, and the Clackamas Industrial Area. This route, which would run within TriMet's service district, would require negotiations with TriMet for SAM to operate. Other transit options with other agencies could be explored.
- In addition, SAM is looking to make investments in new buses (potentially electric buses or non-petroleum-based fuel buses) and in dispatch technology for paratransit.

Next Steps

This memorandum will be reviewed with the Project Management Team (PMT), Technical Advisory Committee (TAC), and Public Advisory Committee (PAC) and used to inform the Transit Development Plan by evaluating existing services and summarizing transit needs.

Appendices

- A. Detailed Route Information
- B. TCQSM Level of Service Procedures
- C. Commute Information Details

Appendix A. Detailed Route Information

Table A-1. Existing Service Summary

Service Provider	Route	Service Span			Weekday Service Span LOS	Service Type	Headways	Weekday Headway LOS	Connected Locations	Fare
		Weekdays	Saturdays	Sundays						
TriMet	Westside Express Service (WES)	5:15 AM – 10:00 AM; 3:30 PM – 8:00 PM	No Service	No Service	E	Regional Commuter Rail	30 minutes	D	Wilsonville, Beaverton	\$2.50 for 2.5 hours, \$5 for day pass
	MAX Green Line	3:45 AM – 1:00 AM	4:15 AM – 2:00 AM	4:15 AM – 1:45 AM	A	Light Rail	15 minutes	C	Clackamas Town Center, Portland	
	MAX Orange Line	4:00 AM – 12:30 AM	5:00 AM – 1:30 AM	5:00 AM – 1:30 AM	A	Light Rail	15 minutes	C	Milwaukie, North Portland	
	Line 29 – Lake/Webster Road	5:30 AM – 8:00 PM	No Service	No Service	C	Fixed-Route Bus	75-90 minutes	F	Clackamas Town Center, Milwaukie	
	Line 30 – Estacada	4:30 AM – 9:15 PM	8:30 AM – 7:30 PM	8:30 AM – 7:30 PM	B	Fixed-Route Bus	30 minutes; 1 hour on weekends	D	Clackamas Town Center, Estacada	
	Line 31 – Webster Road	5:30 AM – 10:15 PM	7:45 AM – 10:15 PM	7:45 AM – 10:15 PM	B	Fixed-Route Bus	30 minutes; 40 minutes on weekends	D	Clackamas Town Center, Oregon City	
	Line 32 – Oatfield	5:00 AM – 10:00 PM	9:45 AM – 5:30 PM	9:45 AM – 5:30 PM	B	Fixed-Route Bus	15 minutes weekday peak; 30 minutes weekdays; 1 hour on weekends	C	Milwaukie, CCC	
	Line 33 – McLoughlin/ King Road	4:15 AM – 2:00 AM	5:30 AM – 2:00 AM	5:30 AM – 2:00 AM	A	Fixed-Route Bus	15 minutes	C	Clackamas Town Center, Milwaukie, Oregon City, CCC	
Line 34 – Linwood/River Road	6:00 AM – 8:00 PM	No Service	No Service	C	Fixed-Route Bus	30-40 minutes	E	Clackamas Town Center, Milwaukie, Oregon City		

Service Provider	Route	Service Span			Weekday Service Span LOS	Service Type	Headways	Weekday Headway LOS	Connected Locations	Fare
		Weekdays	Saturdays	Sundays						
	Line 35 – Macadam/ Greeley	4:45 AM – 1:15 AM	5:30 AM – 1:15 AM	6:00 AM – 1:15 AM	A	Fixed-Route Bus	15 minutes weekday peak; 30 minutes on weekdays; 40-50 minutes on weekends	C	Oregon City, Lake Oswego, Portland	
	Line 36 – South Shore	7:00 AM – 7:00 PM	No Service	No Service	D	Fixed-Route Bus	30 minutes weekday peak; 60 minutes weekdays	D	Lake Oswego, Portland, Tualatin	
	Line 37 – Lake Grove	7:00 AM – 5:30 PM	No Service	No Service	E	Fixed-Route Bus	60-90 minutes	F	Lake Oswego, Tualatin	
	Line 38 – Boones Ferry Road	5:45 AM – 7:45 PM	No Service	No Service	C	Fixed-Route Bus	30-45 minutes during peak periods only	E	NW Lake Oswego, Portland	
	Line 70 – 12 th /NE 33 rd Avenue	5:00 AM – 11:15 PM	8:30 AM – 11:00 PM	8:45 AM – 7:45 PM	A	Fixed-Route Bus	15 minutes on weekdays; 20 minutes on weekends	C	Milwaukie, NE Portland	
	Line 71 – 60 th Avenue	4:30 AM – 11:15 PM	7:15 AM – 11:45 PM	7:45 AM – 11:15 PM	A	Fixed-Route Bus	20 minutes	C	Clackamas Town Center, East Portland	
	Line 72 – Killingsworth/ 82 nd Avenue	4:15 AM – 2:00 AM	5:15 AM – 1:45 AM	5:15 AM – 1:45 AM	A	Fixed-Route Bus	10-15 minutes	B	Clackamas Town Center, North Portland	
	Line 75 – Cesar Chavez/ Lombard	4:45 AM – 1:30 AM	5:30 AM – 1:45 AM	5:30 AM – 1:45 AM	A	Fixed-Route Bus	15 minutes	C	Milwaukie, North Portland	
	Line 76 – Beaverton/ Tualatin	5:45 AM – 11:15 AM	6:30 AM – 10:30 AM	6:30 AM – 10:30 AM	A	Fixed-Route Bus	30 minutes	D	Tualatin, Beaverton	
	Line 78 – Beaverton/ Lake Oswego	5:30 AM – 12:30 AM	6:00 AM – 12:00 AM	6:00 AM – 11:30 PM	A	Fixed-Route Bus	30 minutes; 40 minutes on Sundays	D	Lake Oswego, Washington Square, Beaverton	
	Line 79 – Clackamas/ Oregon City	5:30 AM – 10:30 PM	7:30 AM – 10:30 PM	7:30 AM – 10:30 PM	B	Fixed-Route Bus	30 minutes on weekdays, 40 minutes on weekends	D	Clackamas Town Center, Oregon City	

Service Provider	Route	Service Span			Weekday Service Span LOS	Service Type	Headways	Weekday Headway LOS	Connected Locations	Fare
		Weekdays	Saturdays	Sundays						
	Line 96 – Tualatin/I-5	5:15 AM – 9:15 PM	No Service	No Service	B	Express Fixed-Route Bus	15 minutes during peak periods, 30 minutes during non-peak periods	C	Tualatin, Portland	
	Line 99 – Macadam/McLoughlin	5:15 AM – 7:15 PM	No Service	No Service	C	Fixed-Route Bus	15-20 minutes during peak periods only	C	Oregon City, Milwaukie, Portland	
	Line 152 – Milwaukie	6:30 AM – 6:30 PM	No Service	No Service	D	Fixed-Route Bus	30 minutes during peak periods, 40 minutes during non-peak periods	D	Clackamas Town Center, Milwaukie	
	Line 154 – Willamette/Clackamas Heights	5:45 AM – 7:30 PM	No Service	No Service	C	Fixed-Route Bus	60 minutes	E	Oregon City, West Linn	
	Line 155 – Sunnyside	5:30 AM – 11:15 PM	6:45 AM – 11:15 PM	6:45 AM - 11:15 PM	A	Fixed-Route Bus	30 minutes	D	Clackamas Town Center, Happy Valley	
	Line 156 – Mather Road	5:30 AM – 7:45 PM	No Service	No Service	C	Fixed-Route Bus	90 minutes	F	Clackamas Town Center, Happy Valley	
	Line 291 – Orange Night Bus ¹	11:45 PM – 1:15 AM	12:45 AM – 1:15 AM	12:45 AM – 1:15 AM	F	Fixed-Route Bus	60 minutes on weekdays	E	Portland, Milwaukie	
SMART	1X – Salem ²	5:00 AM – 7:45 PM	No Service	No Service	C	Intercity Fixed-Route Bus	30 minutes during peak periods, 60 minutes during non-peak periods	D	Wilsonville, Salem	\$3
	2X – Tualatin Park & Ride	5:00 AM – 9:45 PM	8:00 AM – 6:15 PM	No Service	B	Fixed-Route Bus	20-30 minutes on weekdays; 30 minutes on Saturday	D	Wilsonville, Tualatin	Free
	3X – Canby	5:30 AM – 7:15 PM	No Service	No Service	C	Fixed-Route Bus	60 minutes	E	Wilsonville, Canby	\$1.50
	4 – Wilsonville Road	4:45 AM – 8:30 PM	7:30 AM – 6:00 PM	No Service	B	Fixed-Route Bus	30 minutes	D	Wilsonville	Free
	5 – 95 th Avenue	5:15 AM – 7:00 PM	No Service	No Service	C	Fixed-Route Bus	30 minutes, peak period service only	D	Wilsonville	

Service Provider	Route	Service Span			Weekday Service Span LOS	Service Type	Headways	Weekday Headway LOS	Connected Locations	Fare
		Weekdays	Saturdays	Sundays						
	6 – Canyon Creek	6:30 AM – 8:00 PM	No Service	No Service	C	Fixed-Route Bus	30 minutes, peak period service only	D	Wilsonville	
	7 – Villebois	5:30 AM – 7:45 PM	No Service	No Service	C	Fixed-Route Bus	30 minutes, peak period service only	D	Wilsonville	
	C – Charbonneau Shuttle	10:00 AM – 5:00 PM	No Service	No Service	E	Shopping Shuttle	60 minutes	E	Wilsonville, Charbonneau	
	V – Villebois Shopping Shuttle	9:00 AM – 4:00 PM	9:00 AM – 4:00 PM	No Service	E	Shopping Shuttle	60 minutes	E	Wilsonville	
SCTD	Molalla City	7:30 AM – 5:35 PM	9:30 AM – 3:45 PM	No Service	E	Deviated Fixed-Route Bus	60 minutes	E	Molalla	Free
	Molalla to Canby	6:30 AM – 6:15 PM	No Service	No Service	D	Intercity Fixed-Route Bus (Flag Stops Allowed)	60 minutes	E	Molalla, Canby	\$1
	Molalla to CCC	5:00 AM – 8:30 PM	7:00 AM – 5:00 PM	No Service	C	Intercity Fixed-Route Bus (Flag Stops Allowed)	30 minutes weekday peak; 60 minutes otherwise	D	Molalla, CCC	\$1
SAM	Gresham Service	5:30 AM – 10:00 PM	5:30 AM – 10:30 PM	7:00 AM – 10:00 PM	B	Intercity Fixed-Route Bus	30 minutes on weekdays; 60 minutes on Saturdays; 8 runs on Sundays	D	Sandy, Gresham	\$1
	Estacada Service	7:00 AM – 6:30 PM	7:00 AM – 6:30 PM	No Service	D	Intercity Fixed-Route Bus	Five runs a day	F	Sandy, Estacada	\$1
	Shopper Shuttle In-Town Service	12:00 PM – 7:20 PM	No Service	No Service	E	Shopping Shuttle	30 minutes	D	Sandy	Free
CAT	Route 99X	5:00 AM – 10:45 PM	8:00 AM – 6:45 PM	No Service	B	Intercity Fixed-Route Bus	30-60 minutes ³	E	Woodburn, Canby, Oregon City	\$1

Service Provider	Route	Service Span			Weekday Service Span LOS	Service Type	Headways	Weekday Headway LOS	Connected Locations	Fare
		Weekdays	Saturdays	Sundays						
Mt. Hood Express	The Express Route	5:15 AM – 11:15 PM ⁴	5:15 AM – 11:15 PM ⁴	5:15 AM – 11:15 PM ⁴	A	Intercity Fixed-Route Bus	7 runs per day in each direction	F	Sandy, Government Camp, Timberline	\$2
	Villages Shuttle Route	5:45 AM – 8:15 PM	5:45 AM – 8:15 PM	5:45 AM – 8:15 PM	C	Intercity Fixed-Route Bus	4 runs per day in each direction	F	Sandy, Rhododendron	\$2
CCC	Xpress Shuttle	7:15 AM – 10:45 PM (Mon – Thurs) 7:15 AM – 11:45 AM (Fri)	No Service	No Service	C	Campus shuttle	30-60 minutes	E	Clackamas Community College, Oregon City, Clackamas Town Center	Free

¹TriMet offers Line 291 – Orange Night Bus service as a southbound-only service. There are two runs on weeknights, and there is one run on each weekend night.

²Service on 1X – Salem is provided by both SMART and Cherriots (Salem).

³On weekdays, service between Oregon City and Canby is offered every 30 minutes, while service between Oregon City-Canby-Woodburn is offered every 60 minutes. Saturday service is every 60 minutes.

⁴Winter service provides an extra run both westbound and eastbound in the evening. Non-winter hours (April through November) are 5:15 AM – 9:00 PM.

Appendix B. TCQSM Level of Service Procedures

TCQSM Level of Service Procedures

Chapter 3 of the TCQSM provides an extended discussion on quality of service, which is the evaluation of transit service from the passenger's point-of-view. The TCQSM uses six measures to quantify service quality. Each of these measures is assigned a letter value, where LOS A represents the best service from the passenger perspective and LOS F represents the worst service. *(Note that high LOS values, such as LOS A or B, may not reflect optimal service from the transit agency's perspective, because the market may not support those service levels. The development of agency service standards helps to bridge the gap between the kind of service passengers would ideally want and the kind of service that is reasonable to provide, given available resources.)* The transit LOS approach mirrors the system commonly used for streets and highways and allows a speedy comparison of service performance to transit passenger desires.

Of the six available measures, three were selected for this analysis as being most relevant to a long-range planning effort. Table B-1 summarizes the TCQSM measures used and the ranges of values used to determine the LOS result for each measure.

Table B-1. Transit Capacity and Quality of Service Manual - Level of Service (LOS) Measures

Level of Service	Transit Capacity and Quality of Service Measures		
	Service Frequency (minutes)	Hours of Service	Service Coverage
LOS A	<10	19-24	90.0-100.0%
LOS B	10-14	17-18	80.0-89.9%
LOS C	15-20	14-16	70.0-79.9%
LOS D	21-30	12-13	60.0-69.9%
LOS E	31-60	4-11	50.0-59.9%
LOS F	>60	0-3	<50.0%

Service Frequency

From the user's perspective, *service frequency* determines how many times an hour a user has access to transit service, assuming that service is provided within acceptable walking distance (measured by *service coverage*) and at the times the user wishes to travel (measured by *hours of service*). Service frequency also measures the convenience of transit service to choice riders and is one component of overall transit trip time (helping to determine the wait time at a stop). Table B-2 describes the level of service thresholds for service frequency.

Table B-2. Service Frequency – Level of Service Thresholds

Level of Service	Description of Service Frequency
LOS A	Passengers are assured that a transit vehicle will arrive soon after they arrive at a stop. The delay experienced if a vehicle is missed is low.
LOS B	Service is still relatively frequent, but passengers will consult schedules to minimize their wait time at the transit stop.
LOS C	Service frequencies still provide a reasonable choice of travel times, but the wait involved if a bus is missed becomes long.
LOS D	Service is only available about twice per hour and requires passengers to adjust their routines to fit the transit service provided.
LOS E	Service is provided approximately once per hour and puts passengers in the position of potentially spending long periods of time waiting for service and/or rearranging schedules to be able to take transit.

LOS F

Service is provided frequencies greater than 1 hour, which entails creative planning or considerable wasted time on the part of passengers.

Hours of Service

Hours of service, also known as “service span,” is the number of hours during the day when transit service is provided along a route, a segment of a route, or between two locations. It plays as important a role as *frequency* and *service coverage* in determining the availability of transit service to potential users: if transit service is not provided at the time of day a potential passenger needs to take a trip, it does not matter where or how often transit service is provided the rest of the day. Table B-3 describes the level of service thresholds for hours of service.

Table B-3. Hours of Service – Level of Service Thresholds

Level of Service	Description of Hours of Service
LOS A	Service is available for most or all of the day. Workers who do not work traditional 8-to-5 jobs receive service and all riders are assured that they will not be stranded until the next morning if a late-evening bus is missed.
LOS B	Service is available late into the evening, which allows a range of trip purposes other than commute trips to be served.
LOS C	Bus service runs only into the early evening, but still provides some flexibility in one's choice of time for the trip home.
LOS D	Service meets the needs of commuters who do not have to stay late and still provides service during the middle of the day for others.
LOS E	Midday service is limited or non-existent and/or commuters have a limited choice of travel times.
LOS F	Transit service is offered only a few hours per day or not at all.

Service Coverage

Service Coverage is a measure of the area within walking distance of transit service. Areas must be within 1/4-mile of a bus stop (or service route if there are no designated stops) or 1/2 mile of a transit station to be considered an area served by transit. As with the other availability measures, service coverage does not provide a complete picture of transit availability by itself, but when combined with frequency and hours of service, it helps identify the number of opportunities people have to access transit from different locations. Service coverage LOS evaluates the percentage of transit-supportive areas—areas that would typically produce the majority of a system's ridership—that are served by transit.

To qualify as a transit-supportive area (TSA) one of the following thresholds must be met:

- Minimum population density of 3 households/gross acre; or
- Minimum job density of 4 employees/gross acre.

Service coverage is an all-or-nothing issue for transit riders—either service is available for a particular trip or it is not. As a result, there is no direct correlation between service coverage LOS and what a passenger would experience for a given trip. Rather, service coverage LOS reflects the number of potential trip origins and destinations available to potential passengers. As noted in Table B-1, at LOS A, 90 percent or more of the TSA's have transit service; at LOS F, less than half of the TSA's have service.

While transit service coverage area includes everything within a ¼ mile of scheduled service, paratransit service coverage is typically provided up to ¾ of a mile of scheduled service.

Appendix C. Commute Information Details

Commuter Information Details

Oregon City

In 2017, approximately 15,820 employed persons lived in Oregon City. Just over one in every four (28.8%) worked in Portland, the most common work destination, while one in every eight employees (12.8%) who lived in Oregon City also worked in Oregon City. Additionally, 4 of the top 10 work destinations for employees living in Oregon City were Washington County jurisdictions.

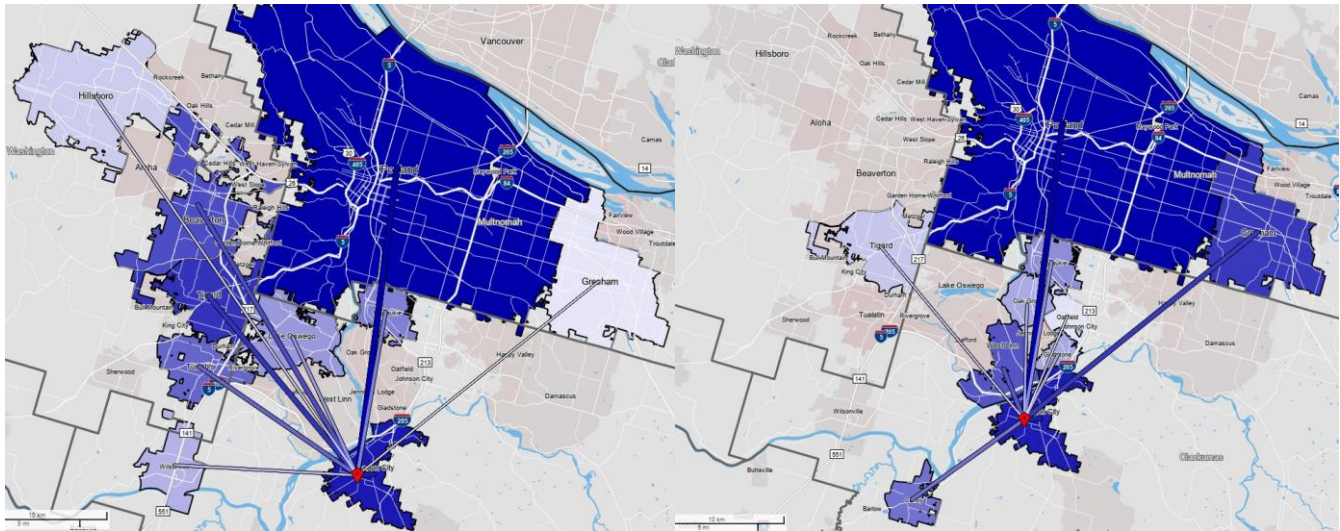
In 2017, approximately 14,100 employees worked in Oregon City. Employees who worked in Oregon City were most likely to live in Portland (15%) and Oregon City (14.4%) – no other jurisdiction accounted for more than 4% of all employees who work in Oregon City. While employed persons who lived in Oregon City work across the Portland metropolitan region, the top 10 locations for employees who worked in Oregon City are much closer: 7 of the top 10 home locations for employees in Oregon City were located in Clackamas County.

Table C-1 and Figure C-1 show the primary home locations for employees in Oregon City and work locations for employees living in Oregon City in 2017.

Table C-1. Employees Coming To and Going From Oregon City

Oregon City Resident Work Locations	Count	Share	Oregon City Employee Home Locations	Count	Share
Portland	4,557	28.8%	Portland	2,121	15.0%
Oregon City	2,026	12.8%	Oregon City	2,026	14.4%
Tigard	699	4.4%	Gresham	439	3.1%
Beaverton	580	3.7%	West Linn	389	2.8%
Tualatin	476	3.0%	Canby	310	2.2%
Milwaukie	473	3.0%	Milwaukie	283	2.0%
Lake Oswego	451	2.9%	Gladstone	263	1.9%
Wilsonville	408	2.6%	Oak Grove (Census Designated Place, CDP)	263	1.9%
Hillsboro	347	2.2%	Tigard	231	1.6%
Gresham	292	1.8%	Oatfield (CDP)	216	1.5%
All Other Locations	5,511	34.8%	All Other Locations	7,559	53.6%

Figure C-1. Map of Employees Leaving Oregon City (Left) and Employees Entering Oregon City (Right)



Note: Darker spokes and shading reflect which cities have the most commutes to and from these cities. The darkest city is the top commute location, while the lightest city is the tenth largest commute location.

Of the 10 most common commute origin and destination cities for Oregon City, five are accessible by transit on a direct route, and four are accessible with a single transfer. Travel to and from Gresham is the only route in Table C-2 that requires two transfers. TriMet Route 35 provides direct service between Oregon City and Portland, the most common commute origin–destination pair with Oregon City.

Table C-2. Most Common Commute Pairs for Oregon City with Transit Connections

Commutes to/from Oregon City	Count (Both Directions)	Number of Transfers	Service Frequency
Portland	6,678	-	15 minutes (peak), 30 minutes (off-peak)
Oregon City	2,026	-	<15 minutes
Tigard	930	1	30 minutes
Beaverton	789	1	30 minutes
Milwaukie	756	-	<15 minutes
Gresham	731	2	30 minutes
Lake Oswego	643	-	15 minutes (peak), 30 minutes (off-peak)
Tualatin	642	1	60 minutes
West Linn	625	-	15 minutes (peak), 30 minutes (off-peak)
Wilsonville	566	1	60 minutes

Wilsonville

In 2017, approximately 9,832 employed persons lived in Wilsonville. Portland (22.3%) and Wilsonville (15.2%) were the top two work destinations for employed persons living in Wilsonville. Two cities within the top 10 work destinations, Salem and Woodburn, were outside the Portland metropolitan area.

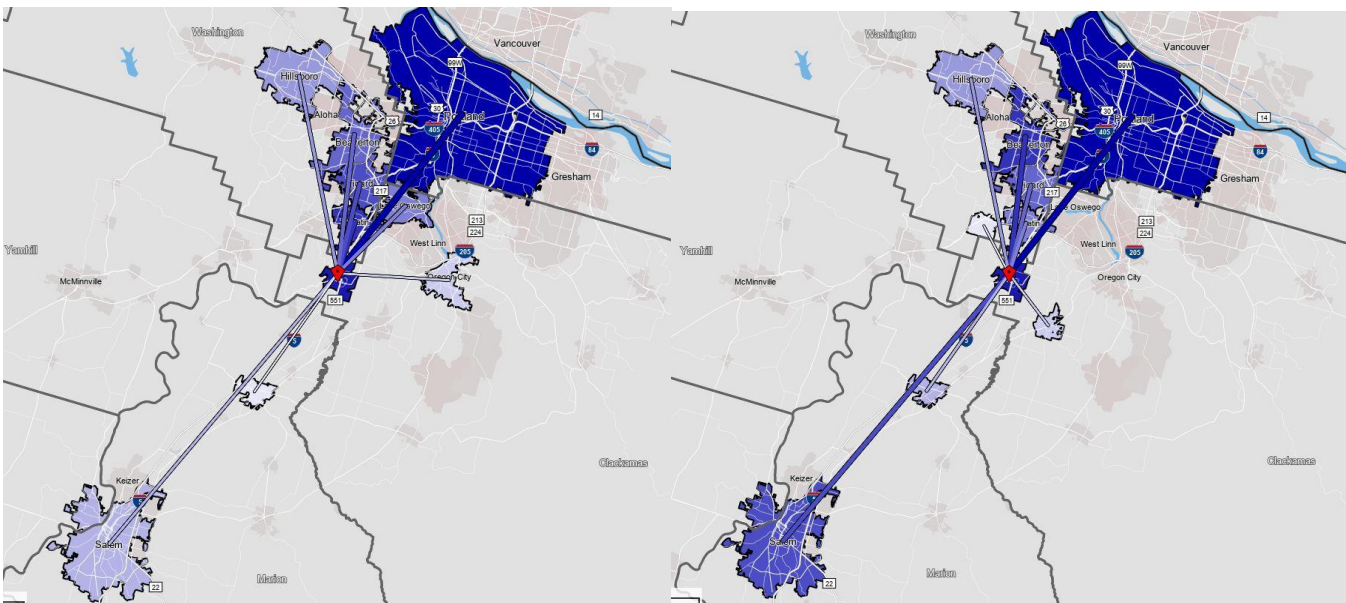
In 2017, approximately 19,137 employees worked in Wilsonville, more than double the number of employees who live in Wilsonville. The top home locations for employees working in Wilsonville are Portland (10.8%) and Wilsonville (7.8%). Salem is the fourth-largest home location for employees in Wilsonville; more than three times as many employees commute from Salem to Wilsonville as do from Wilsonville to Salem.

Table C-3 and Figure C-2 show the primary home locations for employees in Wilsonville and work locations for employees living in Wilsonville. While some of the Wilsonville–Salem employees may be an anomaly due to the way the data treat employers with multiple worksites, Wilsonville’s proximity to Salem indicates many of these employees are likely employed in Salem.

Table C-3. Employees Coming To and Going From Wilsonville

Wilsonville Resident Work Locations	Count	Share	Wilsonville Employee Home Locations	Count	Share
Portland	2,189	22.3%	Portland	2,069	10.8%
Wilsonville	1,499	15.2%	Wilsonville	1,499	7.8%
Tualatin	665	6.8%	Beaverton	782	4.1%
Tigard	653	6.6%	Salem	768	4.0%
Beaverton	547	5.6%	Tigard	672	3.5%
Lake Oswego	432	4.4%	Tualatin	615	3.2%
Hillsboro	395	4.0%	Hillsboro	504	2.6%
Salem	253	2.6%	Woodburn	493	2.6%
Oregon City	158	1.6%	Canby	490	2.6%
Woodburn	137	1.4%	Sherwood	410	2.1%
All Other Locations	2,904	29.5%	All Other Locations	10,835	56.6%

Figure C-2. Map of Employees Leaving Wilsonville (Left) and Employees Entering Wilsonville (Right)



Note: Darker spokes and shading reflect which cities have the most commutes to and from these cities. The darkest city is the top commute location, while the lightest city is the tenth largest commute location.

There are six cities in Table C-4 that are accessible by transit to or from Wilsonville with no transfers during peak commute hours. Portland is the most common origin and destination for employees traveling to or from Wilsonville, and there is no direct transit service between the two cities. Service is available via WES and MAX during peak periods and via SMART line 2X and TriMet line 96 during off-peak periods.

Table C-4. Most Common Commute Pairs for Wilsonville with Transit Connections

Commutes to/from Wilsonville	Count (Both Directions)	Number of Transfers	Service Frequency
Portland	4,258	1	30 minutes (peak); 60 minutes (off-peak)
Wilsonville	1,499	-	30 minutes
Beaverton	1,329	- (peak); 1 (off-peak)	30 minutes
Tigard	1,325	- (peak); 1 (off-peak)	30 minutes
Tualatin	1,280	-	30 minutes (peak); 60 minutes (off-peak)
Salem	1,021	-	30-60 minutes
Hillsboro	899	1 (peak); 2(off-peak)	30 minutes
Lake Oswego	841	1	60-90 minutes
Woodburn	630	1	60 minutes
Canby	619	-	60 minutes

Happy Valley

In 2017, approximately 8,301 employed persons lived in Happy Valley. Portland (41.3%) was the most common work destination, while no other city had more than 5% of employees living in Happy Valley. Happy Valley was the sixth most common work destination for employed persons who lived in Happy Valley.

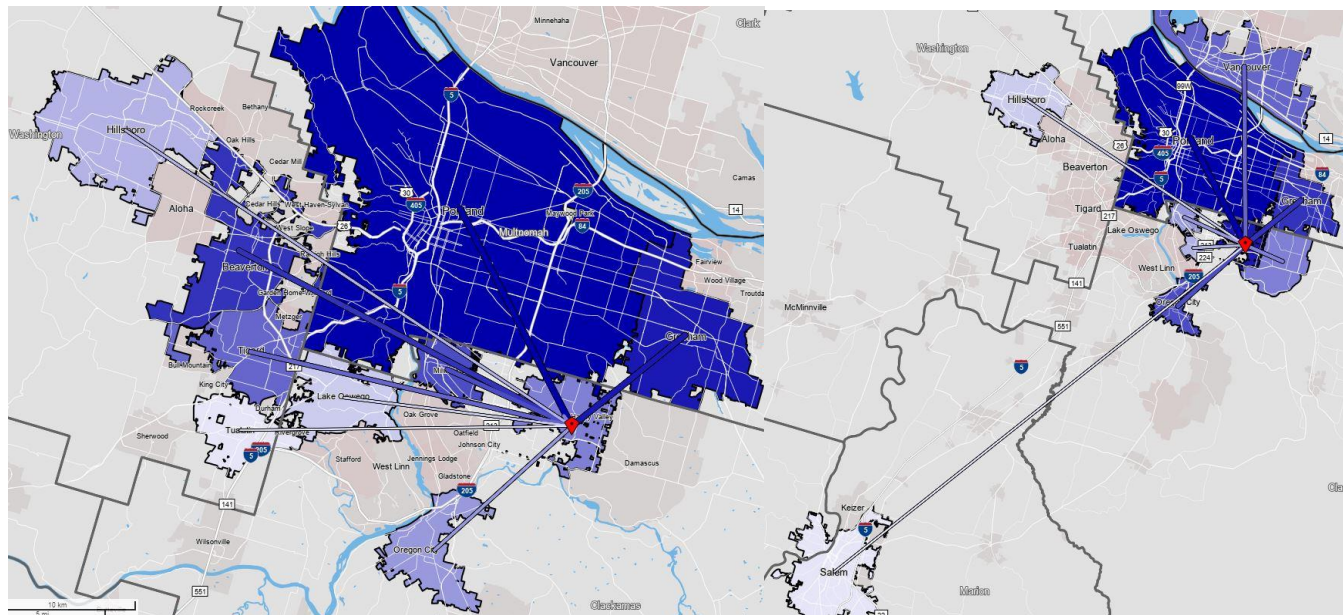
In 2017, approximately 3,664 employees worked in Happy Valley, less than half the number of employed persons who live in Happy Valley. Portland residents account for 22.7% of Happy Valley employees.

Table C-5 and Figure C-3 show the primary home locations for employees in Happy Valley and work locations for employees living in Happy Valley. The high Salem employment may be due to the data anomaly noted previously.

Table C-5. Employees Coming To and Going From Happy Valley

Happy Valley Resident Work Locations	Count	Share	Happy Valley Employee Home Locations	Count	Share
Portland	3,430	41.3%	Portland	830	22.7%
Gresham	413	5.0%	Happy Valley	226	6.2%
Beaverton	305	3.7%	Gresham	225	6.1%
Milwaukie	294	3.5%	Oregon City	117	3.2%
Tigard	279	3.4%	Vancouver	85	2.3%
Happy Valley	226	2.7%	Damascus (CDP)	78	2.1%
Oregon City	210	2.5%	Milwaukie	74	2.0%
Hillsboro	158	1.9%	Oatfield (CDP)	66	1.8%
Lake Oswego	156	1.9%	Hillsboro	62	1.7%
Tualatin	149	1.8%	Salem	59	1.6%
All Other Locations	2,681	32.3%	All Other Locations	1,842	50.3%

Figure C-3. Map of Employees Leaving Happy Valley (Left) and Employees Entering Happy Valley (Right)



Note: Darker spokes and shading reflect which cities have the most commutes to and from these cities. The darkest city is the top commute location, while the lightest city is the tenth largest commute location.

Persons traveling to or from Happy Valley for work by transit must transfer at least once (at Clackamas Town Center). As Table C-6 shows, three cities require one transfer (including Portland, the most common origin or destination for people traveling to or from Happy Valley for work), while six cities require two transfers.

Table C-6. Most Common Commute Pairs for Happy Valley with Transit Connections

Commutes to/from Happy Valley	Count (Both Directions)	Number of Transfers	Service Frequency
Portland	4,260	1	30 minutes
Gresham	638	2	30 minutes
Milwaukie	368	1	40 minutes
Beaverton	358	2	30 minutes
Oregon City	327	1	30 minutes
Tigard	320	2	30 minutes
Happy Valley	226	-	30 minutes
Hillsboro	220	2	30 minutes
Lake Oswego	194	2	30 minutes
Tualatin	183	2	30 minutes

Molalla

In 2017, approximately 4,073 employed persons lived in Molalla. Molalla, which is about equidistant from both downtown Portland and downtown Salem, has 780 persons working in Portland (19.2%) and 137 persons working in Salem (3.4%). All of the other top 10 locations for where employees living in Molalla work are north of Molalla headed toward Portland.

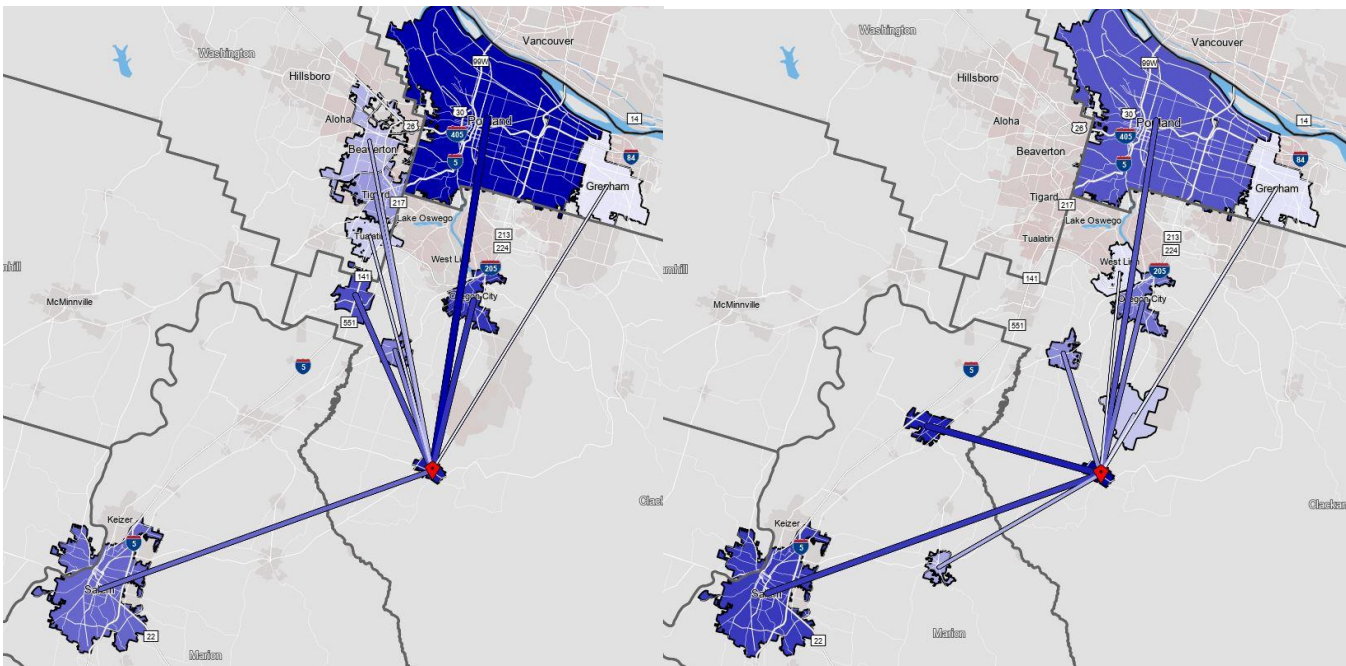
In 2017, approximately 2,568 employees worked in Molalla. Of these employees, 472 also work in Molalla (18.4%). Woodburn (6.1%), Salem (4.4%), and Portland (3.5%) are second, third, and fourth, respectively, for home locations for employees who work in Molalla.

Table C-7 and Figure C-4 show the primary home locations for employees in Molalla and work locations for employees living in Molalla. As before, the high Salem employment may be due to the data anomaly noted in the introduction.

Table C-7. Employees Coming To and Going From Molalla

Molalla Resident Work Locations	Count	Share	Molalla Employee Home Locations	Count	Share
Portland	780	19.2%	Molalla	472	18.4%
Molalla	472	11.6%	Woodburn	156	6.1%
Oregon City	202	5.0%	Salem	112	4.4%
Wilsonville	150	3.7%	Portland	89	3.5%
Salem	137	3.4%	Oregon City	81	3.2%
Canby	136	3.3%	Canby	61	2.4%
Tigard	120	2.9%	Silverton	58	2.3%
Beaverton	108	2.7%	Mulino (CDP)	46	1.8%
Tualatin	104	2.6%	Gresham	26	1.0%
Gresham	95	2.3%	West Linn	26	1.0%
All Other Locations	1,769	43.4%	All Other Locations	1,441	56.1%

Figure C-4. Map of Employees Leaving Molalla (Left) and Employees Entering Molalla (Right)



Note: Darker spokes and shading reflect which cities have the most commutes to and from these cities. The darkest city is the top commute location, while the lightest city is the tenth largest commute location.

As Table C-8 shows, three cities – Molalla, Oregon City, and Canby – are accessible by transit to Molalla without a transfer. Portland is the most common origin or destination for people traveling to or from Molalla for work, and this trip requires two transfers during off-peak periods.

Table C-8. Most Common Commute Pairs for Molalla with Transit Connections

Commutes to/from Molalla	Count (Both Directions)	Number of Transfers	Service Frequency
Portland	869	1 (peak); 2 (off-peak)	30 minutes
Molalla	472	-	60 minutes
Oregon City	283	-	30-45 minutes
Salem	249	2	60-90 minutes
Woodburn	228	1	60-90 minutes
Canby	197	-	60-90 minutes
Wilsonville	163	1	60-90 minutes
Tigard	138	2	60-90 minutes
Gresham	121	2 (peak); 3 (off-peak)	30 minutes
Beaverton	116	2	60-90 minutes
Tualatin	116	2	60-90 minutes

Sandy

In 2017, approximately 5,321 employees lived in Sandy. The top three work destinations for employees living in Sandy were Portland (28.4%), Sandy (12.2%), and Gresham (10.2%), accounting for more than 50% of all employees who live in Sandy. Both Gresham and Sandy are served by Sandy Area Metro (SAM), while a transfer from SAM to the TriMet MAX Blue Line in Gresham provides access to Portland.

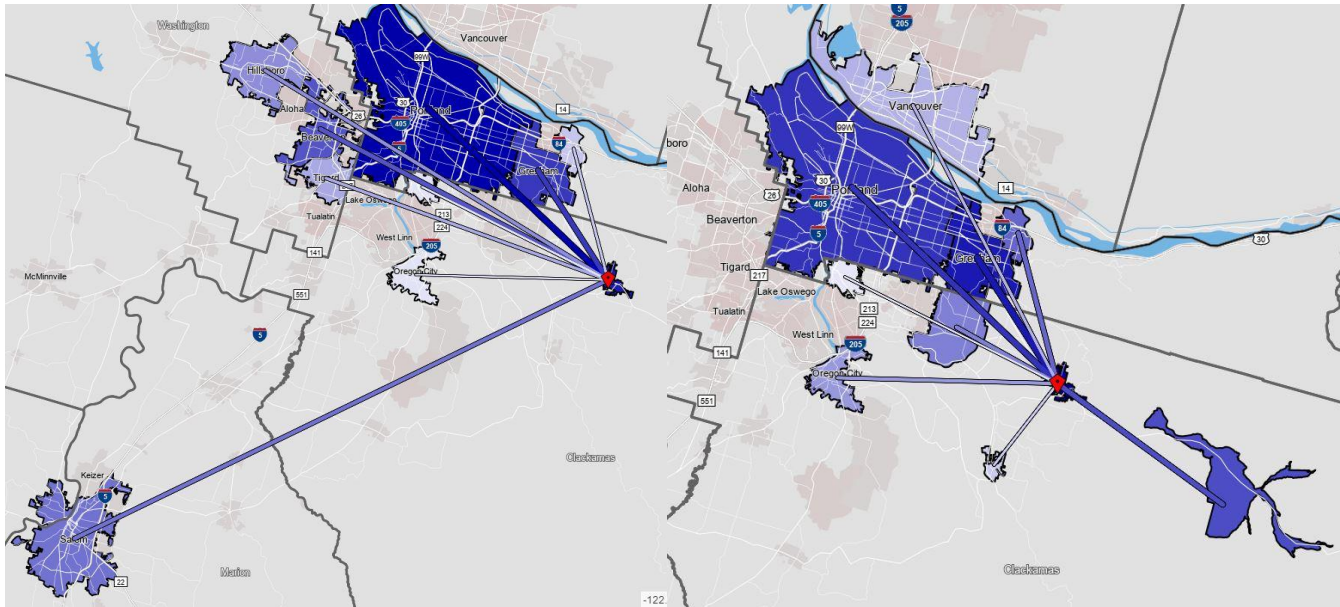
In 2017, approximately 3,255 employed persons worked in Sandy. One in five (19.9%) employees in Sandy also lived in Sandy, while Gresham was home to the second-highest number of employees who work in Sandy (12.3%). Within the top 10 home locations for employees in Sandy, there were jurisdictions in all directions from Sandy, including Vancouver, Estacada, and Mount Hood Village.

Table C-9 and Figure C-5 show the primary home locations for employees in Sandy and work locations for employees living in Sandy. The high Salem employment may be due to the data anomaly noted in the introduction.

Table C-9. Employees Coming To and Going From Sandy

Sandy Resident Work Locations	Count	Share	Sandy Employee Home Locations	Count	Share
Portland	1,509	28.4%	Sandy	649	19.9%
Sandy	649	12.2%	Gresham	399	12.3%
Gresham	542	10.2%	Portland	271	8.3%
Beaverton	121	2.3%	Mount Hood Village (CDP)	113	3.5%
Salem	118	2.2%	Troutdale	66	2.0%
Hillsboro	104	2.0%	Damascus (CDP)	54	1.7%
Tigard	102	1.9%	Oregon City	38	1.2%
Troutdale	88	1.7%	Vancouver	32	1.0%
Milwaukie	84	1.6%	Estacada	28	0.9%
Oregon City	84	1.6%	Milwaukie	26	0.8%
All Other Locations	1,920	36.1%	All Other Locations	1,579	48.5%

Figure C-5. Map of Employees Leaving Sandy (Left) and Employees Entering Sandy (Right)



Note: Darker spokes and shading reflect which cities have the most commutes to and from these cities. The darkest city is the top commute location, while the lightest city is the tenth largest commute location.

Sandy, Gresham, and Mount Hood Village are all accessible by transit to or from Sandy without a transfer (see Table C-10). Any city that is on the MAX Blue Line, including Portland (the most common origin or destination for people traveling to or from Sandy for work) and cities on the west site, is accessible with one transfer.

Table C-10. Most Common Commute Pairs for Sandy with Transit Connections

Commutes to/from Molalla	Count (Both Directions)	Number of Transfers	Service Frequency
Portland	1,780	1	30 minutes
Gresham	941	-	30 minutes
Sandy	649	-	30 minutes
Mount Hood Village (CDP)	164	-	120 minutes
Troutdale	154	1	30 minutes
Salem	144	3	60 minutes (peak hour only)
Beaverton	132	1	30 minutes
Oregon City	122	2	30 minutes
Tigard	117	2	30 minutes
Hillsboro	115	1	30 minutes