PORTLAND 2045

TRANSPORTATION SYSTEM PLAN

FINAL

Existing + Future Conditions Report

June

2026

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Introduction

The 2045 Transportation System Plan (TSP) is the 20-year plan to guide transportation policies and investments in Portland. TSPs are required by Oregon Administrative Rules (OARs) and specific directions for compliance are legally detailed through the state's Transportation Planning Rules (TPRs). The TPRs ensure that TSPs adhere to State goals and federal regulations that require State departments of transportation and metropolitan planning organizations to conduct statewide and metropolitan transportation planning. The Existing and Future Conditions processes for TSP updates are specifically proscribed in TPRs.

For this work, the outcome of Existing Conditions is a summary of transportation system gaps and deficiencies. A "gap" refers to a missing connection or facility -- essentially the absence of something that should exist to provide a complete transportation network but does not. A "deficiency" refers to an existing facility that is present but inadequate or insufficient to provide a complete transportation network as defined by the TPRs. Together, gaps and deficiencies define the system's "needs." These needs are identified by comparing the City's Planned System (which are primarily projects from previously adopted modal plans) with a multimodal Inventory (defined in new TPRs which summarizes facilities and conditions for each major mode of transportation).

Future Conditions produce an additional set of needs on top of the "existing needs" already established from the Existing Conditions process. These are the result of applying a projection of future land use and travel demand conditions for the planning horizon and system performance standards.

Together, the existing and future needs represent a universe of potential need as a foundation from which the subsequent 2045 TSP work plan task of Developing and Evaluating Solutions is built, resulting in the Major Capital Projects List.

Existing Conditions process

Future Conditions process

Next steps

In the next phase of the 2045 TSP work plan, the project team will overlay the combined existing and future transportation system needs identified in this analysis onto the set of projects already identified. These existing projects include:

- All projects from the 2035 TSP Major Capital Projects List (both financially constrained and unconstrained),
- Projects from plans adopted since the last TSP update in March 2020, minus projects that have been completed or will be completed before adoption of the 2045 TSP.

The remaining unaddressed needs (those not covered by existing projects) will be resolved by either:

- Modifying existing project descriptions and planning-level cost estimates to incorporate relevant gaps and deficiencies, or
- Creating new projects to address those needs.

This step does not determine prioritization for the Financially Constrained Major Capital Projects List. All projects (whether existing, modified, or new) must undergo evaluation using the project evaluation criteria and meet the detailed prioritization requirements outlined in OAR 660-012-0155.

Existing Conditions

This section summarizes the existing conditions of the multimodal transportation system in Portland. It summarizes the pedestrian, bicycle, transit, motor vehicle, air, marine, pipeline, rail, and freight systems.

The section is split into three parts:

1. Demographics and land use;
2. Existing conditions inventory; and
3. Existing conditions needs analysis.

Demographics and Land Use

The city of Portland is the study area for this plan update. The boundaries are shown in Figure 1. Portland is the largest city in the state with a population of approximately 650,000 and area of 145 square miles.

Figure 1: Study Area

Land Use

Land use and zoning are determined in the City's 2035 Comprehensive Plan. See Figure 2 for an excerpt of the current zoning map from the Comprehensive Plan. No updates are being made to the zoning as a part of this TSP update. However, it is important to consider land use and zoning impacts on transportation when updating the TSP, which is the transportation element of the Comprehensive Plan.

Figure 2: Zoning

Key Destinations and Activity Centers

Key Destinations are defined as "destinations determined locally that are expected to attract a higher-than-average rate of pedestrian, bicycle, or transit trips… [including any] other key destinations determined locally," based on the requirements established in OAR-660-0012-0360.

Key Destinations serve two primary functions within the TSP framework established by the TPRs. First, they inform the development of the Planned System, a multimodal network designed to connect travelers to key activity centers across the city. The Planned System must align with state requirements and is informed by previously adopted modal plans, including PedPDX: Portland's Citywide Pedestrian Plan, the Portland Bicycle Plan for 2030, and the 2040 Portland Freight Plan, among others.

Second, Key Destinations are used as part of the project prioritization process. They serve as one of the evaluation criteria for identifying and ranking transportation investments. Projects that enhance access to Key Destinations by walking, bicycling, or transit receive greater prioritization, supporting PBOT's broader objectives for equity, safety, and multimodal connectivity, while also meeting TPR requirements.

Portland's Key Destinations were selected based on the suggested categories in the TPRs and input from the 2045 TSP Technical Advisory Committee and 2045 TSP Community Advisory Committee. For details on the engagement and technical process to identify Key Destinations, please see the Key Destinations Prioritization Report on the project website: 2045 TSP: Documents | Portland.gov

Key destinations are shown in Figure 3 and contain the following categories: Hospitals, Farmers Markets, Libraries, Grocery Stores, Schools, Colleges, Community and Cultural Centers, Parks, and Climate Friendly Areas (Comprehensive Plan Centers and Metro 2040 Centers). There is a total of 773 key destinations.

Figure 3: Key Destinations

Population Demographics

Portland continues to experience significant demographic shifts and has persistent inequities that shape transportation access, safety, and affordability. Portland is becoming increasingly diverse. As these communities concentrate in east and north Portland, it is becoming more important to make sure the transportation network connects these areas effectively. In 2023, the city's population was estimated at 642,715, reflecting an 8.1% increase since 2013—an addition of approximately 48,158 residents. During this period, the share of Black, Indigenous, and People of Color (BIPOC) grew by 5.5%, with notable growth among Asian, Hispanic/Latino, and multiracial communities, particularly in East and North Portland. Many Limited English Proficiency (LEP) households are concentrated in these same areas, which also overlap with lower-income neighborhoods.

Approximately 13.7% of Portlanders live with a disability, with the highest concentrations in Downtown/Central City, Albina/North Portland, Buckman, Foster/Powell, Arleta, Powellhurst Gilbert, and outer East/Southeast neighborhoods.

Transportation disparities are a reality. Nearly 29% of Black/African American households lack access to a vehicle, compared to 12% of white households. These households rely on transit, walking, or biking as their primary modes of transportation. At the same time, transit performance has declined: average TriMet bus speeds dropped 17% between 2005 and 2024, disproportionately affecting communities with limited car access. Active

transportation infrastructure also reflects inequity—census tracts with higher BIPOC populations have lower intersection density than census tracts with lower BIPOC populations (135 intersections per square mile versus 204 intersections per square mile), reducing walkability and bike connectivity. These neighborhoods present the greatest opportunity for active transportation investments.

Safety outcomes mirror these disparities. High-vulnerability areas (Equity Matrix scores 8–10) experienced six times more traffic fatalities per capita than the citywide average in 2024. East Portland's traffic death rate was 2.5 times higher than other areas, and pedestrian fatalities were nearly double. Beyond traffic safety, BIPOC and disabled individuals report harassment, bias, and over-policing in public and transit spaces, with many prioritizing protection from hate crimes over roadway concerns.

Environmental and health burdens compound these inequities. Transportation remains Portland's largest source of greenhouse gas emissions. BIPOC communities face higher rates of asthma, heart disease, and hypertension and live in areas with greater air and noise pollution. Tree canopy coverage is significantly lower in high-BIPOC neighborhoods (21.4% versus 33.2% in predominantly white areas), increasing heat vulnerability and reducing climate resilience. Limited active transportation options further contribute to physical inactivity, exacerbating chronic health conditions.

Economic pressures intensify these challenges. Infrastructure improvements and transit investments often correlate with rising property values, increasing the risk of displacement for long-term residents. Displaced households frequently encounter longer commutes, poorer infrastructure, and reduced access to essential services. Transportation costs also weigh heavily on low-income households, consuming nearly 25% of income, well above the affordability benchmark of 15%.[1] For these reasons, it is critical to pair transportation investments with strong anti-displacement strategies.

This data underscores systemic inequities in mobility, safety, environmental conditions, and affordability, disproportionately impacting BIPOC, Indigenous, immigrants, LEP households, people with disabilities, individuals experiencing homelessness, low-income residents, single parents, LGBTQIA2+ individuals, youth, and seniors. Addressing these disparities requires targeted investments, inclusive engagement, and equity-driven policy frameworks to ensure a safer, more accessible, and sustainable transportation future for all Portlanders.

[1] Center for Neighborhood Technology, Housing + Transportation (H + T) Affordability Index, Housing and Transportation Cost Index, H+T Map | H+T Index

For more information, please find the Draft Major Equity Analysis: Overview and Profile of Existing Disparities on the project website.

Existing Conditions Inventory

The transportation system inventory is a key part of the Needs Analysis. This section will summarize all the required inventory items in the TPRs as well as information useful for the following Needs Analysis.

Pedestrian System

This is an inventory of the pedestrian system in Portland, represented by maps of infrastructure and summaries of transportation data. This data includes data provided by the Oregon Department of Transportation (ODOT) as part of their Multimodal Inventory project. More information on pedestrian planning can be found in the pedestrian modal plan, known as PedPDX[2].

Figure 4: Sidewalks and Trails

Based on the ODOT Multimodal Inventory, Portland has approximately 2,700 linear miles of sidewalk. Approximately 70% of the sidewalk network is 5 feet or wider. Sidewalk condition is a product of when the sidewalks were built, often in conjunction with adjacent development. As a result, inner neighborhoods show a much more complete sidewalk system that is often over a hundred years old. Meanwhile, outer neighborhoods that were annexed into the city later such as Southwest Portland and outer East Portland have less sidewalk completeness. Southwest Portland also faces topological challenges with completing the pedestrian system. Building and maintaining sidewalks is a private obligation under city code; however, the city recognizes the need for sidewalks on priority streets to provide a more complete pedestrian network. More on the planned pedestrian system will be covered in the Needs Analysis section.

Figure 5: Crossings by Type

Figure 5 summarizes the pedestrian and bicyclist crossings by type. This includes signalized crossings, marked crossings at unsignalized locations, and enhanced crossings such as rectangular rapid flashing beacons (RRFBs), illuminated walk signs, or hanging flashing warning lights. Closed crossings are also marked. All remaining un-symbolized crossings are assumed to be unmarked, legal crossings. Crossing distance is generally assumed to be the width of the roadway, from curb to curb. Crossing distances at marked crossings across the city range from 20 to 80 feet, averaging around 50 feet. Given that all

[2] https://www.portland.gov/transportation/planning/pedpdx

intersections are legal crossings in Oregon, crossings are generally spaced no more than 200-400 feet apart, reflecting the standard Portland street spacing of 200-400 feet. Crossing spacing deficiencies for marked crosswalks will be assessed in more detail in the Needs Analysis section.

The presence of curb ramps in Portland depends on several factors: pattern area, the age of adjacent development, and recency of crossing improvements. Generally, if a pedestrian crossing has an enhancement to aid or require driver stop compliance (e.g., RRFB, Pedestrian Hybrid Beacon, half signal, full signal), then curb ramps are both present and ADA compliant. If a corridor improvement project was built in the last few decades, compliant curb ramps are also widely present on crossings of the main corridor street. See more information on curb ramps in the Needs section.

Approximately 32% of Portland is covered by tree canopy, this includes over 252,180 street trees identified in Portland Parks & Recreation's street tree inventory (2024). This tree canopy is unevenly distributed, with canopy cover on the west side of the river at 56% compared to 22% on the east side, where 80% of the population lives. East Portland, Central City, and parts of North Portland have especially low canopy cover. While a few neighborhoods have least 60% canopy cover, over half of Portland's neighborhoods have less than 25% canopy cover.

Portland also has a thriving plaza program of car-free streets that support various needs such as pedestrian and bicycling activity as well as street seating for businesses and community event spaces. PBOT's Portland Public Street Plazas are community-oriented public spaces where business and the neighborhood come together. Rather than just a place to pass through, these sections of city streets become vibrant community hubs where all are welcome. There are currently 20 plazas distributed across the city. See more information and a map of current plazas on their website[3]

Figure 6: Pedestrian Crashes (2019-2023)

The most recent five years of complete data at the time of the inventory is from 2019 to 2023. This does include the outlier year of 2020, which tended to show different trends than the other years due to impacts from the COVID-19 pandemic. The data, shown in Figure 6, shows 111 fatalities and 832 injuries over five years. Clusters of crashes pop out downtown and along streets on the City's High Crash Network (HCN), including MLK Jr Blvd, Cesar Chavez Blvd, 82nd Ave, 122nd Ave, Sandy Blvd and Powell Blvd. More information and a breakdown of crashes can be found on the City's Vision Zero website[4]

[3] https://www.portland.gov/transportation/planning/plazas/plazas
[4] https://www.portland.gov/transportation/vision-zero/vision-zero-data

and dashboard. Crash risk factors including speed, volume, and roadway width are summarized in the roadway system inventory.

Portland has an existing classification system for pedestrians. There is an online mapping application[5] to explore the current TSP pedestrian classification system. The streets are classified in one of the following ways for pedestrians: Local Service Walkway, Neighborhood Walkway, City Walkway, and Major City Walkway. Pedestrians are the primary user of the sidewalk and trail system; however, these classifications have different implications for function. Major City Walkways are intended to provide safe, convenient, and attractive pedestrian access along major streets and trails with a high level of pedestrian activity supported by current and planned land uses. City Walkways should provide access along major streets to neighborhood commercial areas, and other community destinations. Neighborhood Walkways and Local Service Walkways provide connections to and within residential neighborhoods and serve local trips. See more about the land use context for classifications in the Classifications section of the TSP.

There are also dedicated Pedestrian Districts which overlay the classification map. These districts are intended to give priority to pedestrian access in areas where high levels of pedestrian activity exist or are planned and overlap with the Climate Friendly Areas (CFAs) defined earlier in the Key Destinations section.

Bicycle System

This is an inventory of the bicycle system in Portland, represented by maps of infrastructure and summaries of transportation data. Some of the cited transportation data is provided by ODOT's Multimodal Inventory project.

Figure 7: Bike Facilities

Figure 7 shows the location and type of bike facilities in Portland. Bike Boulevard is the statewide term for what is called Neighborhood Greenway in Portland. There are approximately 130 centerline miles of neighborhood greenways in Portland. There are 140 centerline miles of striped bike lanes, about 60 miles of buffered bike lanes and 35 miles of physically separated bike lanes. Additionally, there is a system of paved trails and multi-use paths that are part of the bicycle network, numbering 95 miles. In total there are 465 centerline miles of bike facilities in Portland.

Bike lanes (including buffered and protected bike lanes) range in width from 4 to 12 feet, averaging 6 feet. The roadway condition of these bike facilities is given as the adjacent pavement condition. See more on pavement condition in the Roadways section.

[5] https://www.portland-tsp.com/#/streets

Approximately 60 miles (or 25%) of bike lanes are in poor condition. The remaining 75% of bike lane miles are in fair or good condition.

Crossings data is presented in the Pedestrian System section. Additional data on bicycle crossing treatments is presented in Figure 8. These items may overlap with the previously presented crossing data and add a few bike-specific types of treatments. The treatments labeled "funded" are complete or likely to be complete before the TSP is updated so they are included in the inventory.

Figure 9: Bicyclist Crashes (2019-2023)

The most recent five years of complete data at the time of the inventory is from 2019 to 2023. This does include the outlier year of 2020, which tended to show different trends than the other years due to impacts from the COVID-19 pandemic. The data, shown in Figure 9, shows 11 fatalities and 563 injuries over five years. Clusters of crashes pop out downtown and along streets on the City's High Crash Network, including Foster Rd, Powell Blvd, Broadway, and Division St. More information and a breakdown of crashes can be found on the City's Vision Zero website and dashboard. Crash risk factors including speed, volume and roadway width are summarized in the roadway system inventory. Level of separation for bike facilities as described above is also a crash risk factor. More protection generally decreases the crash risk and provides more safety benefits.

Portland has an existing classification system for bicycling. There is an online mapping application[6] to explore the current TSP bicycle classification system. The streets are classified in one of the following ways for people biking: Local Service Bikeway, City Bikeway, and Major City Bikeway. Bicyclists are the primary user of the bicycle and paved trail system; however, these classifications have different implications for function. Major City Bikeways form the backbone of the city's bikeway network and are intended to serve high volumes of bicycle traffic and provide direct, seamless, efficient travel across and between transportation districts. City Bikeways are intended to establish direct and convenient bicycle access to significant destinations, to provide convenient access to Major City Bikeways and to provide coverage within three city blocks of any given point. Local Service Bikeways are intended to serve local circulation needs for bicyclists and provide access to adjacent properties. See more about the land use context for classifications in the Classifications section of the TSP.

There are also dedicated Bicycle Districts which overlay the classification map. These districts are areas with a dense concentration of commercial, cultural, institutional and/or recreational destinations where the City intends to make bicycle travel more attractive

[6] https://www.portland-tsp.com/#/streets

than driving and overlap with the Climate Friendly Areas defined earlier in the Key Destinations section.

Transit System

This is an inventory of the transit system in Portland, represented by maps of infrastructure and summaries of transportation data. More information can be found on TriMet's website as the primary provider of transit services in the city.

TriMet and the City of Portland are the major transit service providers in the city of Portland. The City of Portland owns Portland Streetcar and operates it in partnership with TriMet in addition to the Aerial Tram which Oregon Health Sciences University (OHSU) operates[7]. Figure 10 maps the transit routes and major stations in the city as of Fall 2025. Major stations are defined as all MAX rail stations and Streetcar stations. See this TriMet webpage for an interactive map of all the bus stop locations in Portland.

Figure 10: Transit Routes and Major Stations

In partnership with transit agencies, the City of Portland operates and maintains several types of transit-supportive facilities including traffic signal systems with transit priority, transit priority lanes, transit signal queue jumps, and more. Figure 11 maps these items that are completed and operational as of the writing of this report. In addition, there are more planned transit-supportive projects focused on improving transit speed and reliability that can be reviewed in the Rose Lane Project Report and website[8], Enhanced Transit Corridors Plan, and partnerships with the regional Better Bus program lead by Metro and TriMet.

Figure 11: Transit-Supportive Facilities

The following is a discussion on which services and facilities are accessible for people with disabilities based on the requirements in the Americans with Disabilities Act for the two major providers in the city: TriMet and Streetcar. TriMet provides several accessibility resources for its riders on its website. It includes section on how to access the bus, train, and streetcar for riders with limited mobility, limited vision, and who are deaf or hard of hearing. All buses, trains, transit centers, and stations are fully accessible to people using mobility devices. Additionally, transit vehicles have boarding ramps that can be deployed as needed. MAX and Streetcar stations are equipped with textured tiles and signs in Braille. In addition, neighborhood shuttles and LIFT paratransit service are available for people who are not able to ride regular buses and trains due to a disability or disabling health

[7] https://portlandstreetcar.org/, https://www.gobytram.com/
[8] https://www.portland.gov/transportation/rose-lanes

condition. In addition to the features of transit vehicles and transit stations, access to transit is an important part of accessibility. This often looks like appropriate sidewalks and crossings to get to transit stations. This will be assessed more in the pedestrian and crossings needs analysis.

Portland has an existing classification system for transit. There is an online mapping application[9] to explore the current TSP transit classification system. The streets are classified in one of the following ways for people riding transit: Local Service, Transit Access Street, Major Transit Priority Street, or Regional Transitway. Transit users are the primary users of the transit system; however, these classifications have different implications for function. Regional Transitways are intended to facilitate regional and interdistrict transit trips with fast and reliable service over long distances, operating in right-of-way exclusively reserved for transit use to the extent possible. Major Transit Priority Streets facilitate the frequent and reliable movement of transit vehicles that connect Central City, regional centers, and town centers with each other and to other major destinations. Transit Access Streets facilitate movement of transit vehicles connecting town centers, neighborhood centers, and industrial and employment areas with other destinations and other transit services. See more about the land use context for classifications in the Classifications section of the TSP.

Transit services in Portland

The City of Portland is served by several transit providers, including TriMet, C-TRAN, Portland Streetcar, Multnomah County (ACCESS shuttle)[10], and Ride Connection. The City of Portland also owns and provides transit via the Portland Streetcar and the Portland Aerial Tram. Each transit agency provides one or more types of service, which vary across the following parameters: types of trips served, how often transit vehicles come, which days of the week there is service, and which hours of the day there is service. The attributes of these service categories are summarized in a general way in the table below.

[9] https://www.portland-tsp.com/#/streets

[10] Alderwood-Cornfoot-Columbia Employment Shuttle Service (ACCESS) operated by Multnomah County https://multco.us/info/access-shuttle

Table 1: Frequency and Span of Service by Transit Service Type*

SERVICE TYPE	FREQUENCY	SPAN	DAYS AVAILABLE
Commuter -C-TRAN -Multnomah County	Every 20-60 minutes	Peak commuting hours (6-9AM; 3-7PM)	Monday-Friday
High-capacity -TriMet (MAX, FX) -Portland (Streetcar)	At least every 15 minutes during core part of day (7AM-7PM)	All day (at least 18 hours a day)	Every day
Frequent Service -TriMet -Aerial Tram	At least every 15 minutes during core part of day (7AM-7PM)	All day (at least 18 hours a day)	Every day
Regular -TriMet -C-TRAN	Every 20-60 minutes	All day (at least 18 hours a day)	Every day
ADA Paratransit Service -TriMet (LIFT)	Demand responsive; within 30 minutes of request	All day (23 hours per day)	Every day

**The named service types usually (but not always) fit within the listed frequency, span, and availability parameters*

Intercity transit

The City of Portland is served by several intercity passenger services, including Amtrak, Columbia Area Transit, Oregon POINT buses, and Tillamook County Transit District.

Amtrak provides service to Portland's Union Station along several routes including: Cascades which connects Portland, Eugene, Seattle, and Vancouver, B.C. via Vancouver, WA with several train and bus trips per day; Coast Starlight, connecting Portland to Los Angeles, Seattle, and points in between via Vancouver, WA with one trip in each direction per day; Empire Builder, connecting Portland to Seattle, Spokane, and Chicago via Vancouver, WA with one trip in each direction per day.

Columbia County serves Portland's Union Station, the Linnton neighborhood and Linnton Community Center and Rainier, OR via Scappoose with two round trips per day on the Columbia County Rider route.

Columbia Area Transit serves Gateway Transit Center in Portland with one line, the Columbia Gorge Express, which has seven round trips per day and connects Portland to Hood River via Troutdale.

C-TRAN serves many destinations throughout Portland with several transit routes connecting to Vancouver, WA and Southwest Washington across the Columbia River. Below is a list of C-TRAN lines and the adjacent jurisdictions they also serve:

- Route 60: Vancouver
- Route 65: Vancouver
- Route 67: Vancouver
- Route 105/105X: Vancouver, Hazel Dell
- Route 164: Vancouver
- Route 190: Vancouver

FlixBus serves Portland's Union Station with several bus lines with several trips a day to destinations including Seattle, Eugene, and Vancouver, B.C.

Greyhound serves Portland's Union Station with several bus lines with several trips a day to destinations including Seattle, Eugene, and Vancouver, B.C.

Northwestern Stage Lines provides intercity bus service for rural cities between Portland's Union Station and Boise, Idaho on Interstate 84. Service route: Portland, Hood River, The Dalles, Boardman, Pasco, Washington; Hermiston, Pendleton, La Grande, Baker City, Ontario; Nampa and Boise, Idaho.

Oregon POINT serves Portland's Union Station with two bus lines: one between Portland and Eugene via Tualatin with five round trips per day; one between Portland and Astoria via Beaverton with two round trips per day.

Tillamook County Transportation District serves Portland's Union Station and Pacific Northwest College of Art with one bus line: Coastliner Tillamook connecting Portland and Tillamook via Beaverton with three round trips per day.

TriMet serves all parts of Portland with dozens of transit lines that cross Portland's boundaries with several jurisdictions, including Beaverton, Gresham, Lake Oswego, Milwaukie, and Tigard. Below is a list of TriMet lines and the adjacent jurisdiction(s) they also serve as of Fall 2025:

- MAX Blue Line: Hillsboro, Beaverton, Gresham
- MAX Green Line: Clackamas County
- MAX Red Line: Hillsboro, Beaverton
- MAX Orange Line: Milwaukie
- FX Line: Gresham
- Line 9: Gresham
- Line 12: Tigard
- Line 16: Sauvie Island
- Line 20: Beaverton, Gresham
- Line 21: Wood Village, Gresham

- Line 25: Troutdale, Wood Village, Gresham
- Line 34: Milwaukie, Clackamas
- Line 35: Lake Oswego, West Linn, Oregon City
- Line 38: Lake Oswego, Tigard
- Line 43: Tigard
- Line 45: Beaverton, Tigard
- Line 54: Beaverton
- Line 56: Beaverton
- Line 58: Beaverton
- Line 70: Milwaukie
- Line 71: Clackamas
- Line 74: Gresham
- Line 75: Milwaukie
- Line 77: Wood Village, Fairview
- Line 87: Gresham
- Line 96: Tualatin, Wilsonville

Roadway System

This is an inventory of the roadway and freight system in Portland, represented by maps of infrastructure and summaries of transportation data. More information can be found in various Master Street Plans, Area Plans, and 2040Freight.

Roadway ownership is useful to understand jurisdiction and maintenance responsibilities. Most of the roads in the city are under the jurisdiction of the City of Portland, specifically the Bureau of Transportation. Note that some private streets are shown on this map, but it doesn't fully cover public access easements or alleys that allow public access. The Portland Bureau of Transportation (PBOT) manages transportation assets worth $21.9 billion. Our transportation system moves people, goods, freight, and emergency vehicles through the city.

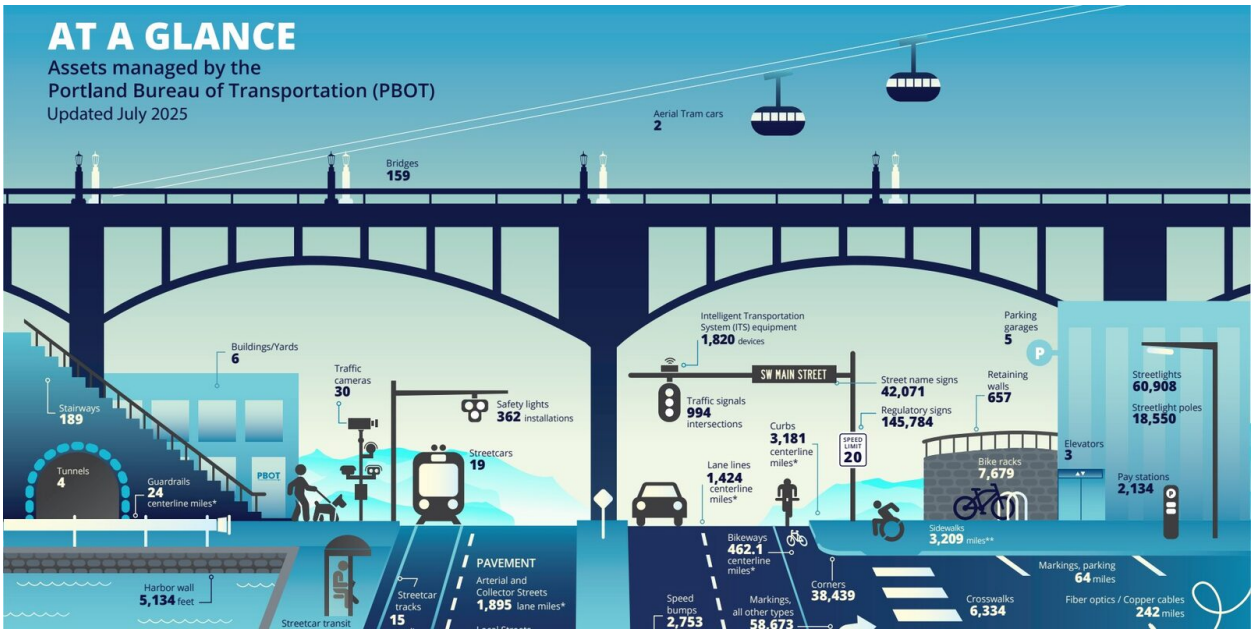


Figure 12: Roadway Ownership map

Portland has an existing classification system for roadways, called "Traffic" in the online mapping application[11] to explore the current TSP classification system. The streets are classified under the traffic classification in one of the following ways: Local Service Traffic Street, Traffic Access Street, Neighborhood Collector Street, District Collector Street, Major City Traffic Street, Regional Trafficway. These classifications have slightly different names than the Federal Functional Class designation, which is the classification used at the state and federal level for roadway classification. It uses the typical arterial – collector – local street labeling system that will be referenced in the Needs Analysis. The following figure is a map of the Federal Functional Class designation on both state and non-state facilities.

Figure 13: Federal Functional Classification

Drivers are the primary user of the collector and arterial roadway system; however, these classifications have different implications for function. Regional Trafficways are intended to serve regional traffic movement that has only one trip end in a City of Portland transportation district or to serve trips that bypass a district completely. Major City Traffic Streets are intended to serve as the principal routes for interdistrict traffic that has at least one trip end within a City of Portland transportation district. District and Neighborhood Collectors are intended to serve as distributors of traffic from Major City Traffic Streets or District Collectors to Local Service Streets or to serve trips that both start and end within a

[11] https://www.portland-tsp.com/#/streets

neighborhood or district. Local Service Traffic Streets are intended to distribute local traffic and provide access to local residences or commercial uses See more about the land use context for classifications in the Classifications section of the TSP. Emergency Response and Street Design classifications are also covered in that section.

Roadway Characteristics

The following figures highlight different components of the roadway system, typically for streets with more traffic than a local street. Local streets are assumed to be one lane in each direction, with no turn lanes and a standard roadway width. For more information on local street design standards, see the PBOT Design Standards.

Number of travel lanes shows the sum of general-purpose travel lanes in both directions. A standard two-way street with one lane in each direction would be shown as two lanes. Turn lanes are not included in this figure. In the city of Portland, there are several corridors with center turn lanes that facilitate left turns along the corridor. These include Columbia Blvd, Lombard St, 82nd Ave, 122nd Ave, Foster Rd, Stark St, Burnside St, Sandy Blvd, Glisan St, and Beaverton-Hillsdale Hwy. It is more common to have short turn pockets at major intersections, or where needed, to facilitate left and right turns.

Figure 14: Number of Travel Lanes

Pavement conditions are monitored for maintenance and operations activities. It is also useful to identify when a facility is at the end of its useful life. The City maintains close to 5,000 lane miles of street network. The following map highlights arterial and collector streets that are in poor or very poor condition (shown as “Poor”). Note that condition of local streets is not shown for this inventory to keep things simple and meet state requirements. Excluding local streets may make the overall pavement condition look better than it is. More information on assets and condition (including on local streets) can be found on their dedicated website[12].

Figure 15: Pavement Condition

Roadway width is an important characteristic for safety as a wider roadway will generally encourage higher travel speeds. Wider roadways are also harder to cross for people walking, biking, and rolling. Roadway width is discussed further in the crash risk factors section below. Lane widths are a part of the roadway width discussion. PBOT has Design Standards for various roadway cross sections depending on the roadway classification. Typical lane widths on Portland roads range from 10-12 feet. Wider lane widths are used to

[12] https://www.portland.gov/transportation/assets

accommodate freight trucks and transit vehicles. The following figure shows lane width for streets with classification above a local street.

Figure 16: Lane Width

There are quite a few interchanges on the limited-access highways in Portland. The following map documents the location and types of those interchanges.

Figure 17: Interchange Types

Freight

2040Freight is Portland's Freight Plan adopted in 2023. The plan was used to update freight related policies and projects in the TSP. It included a robust inventory of existing conditions, as well as a needs analysis. Refer to that plan for more information on the freight system.

Portland has an existing classification system for freight in the online mapping application[13] to explore the current TSP classification system. The streets are classified under the freight classification in one of the following ways: Local Service Truck Street, Truck Access Street, Major Truck Street, Priority Truck Street, Regional Truckway. In addition, there are Freight Districts identified, with Freight District Streets within them. Freight Districts are intended to provide safe and convenient truck mobility and access in industrial and employment areas serving high levels of truck traffic and to accommodate the needs of intermodal freight movement. Railroad main lines and branch lines also transport freight cargo and passengers over long distances as part of the railway network.

Freight vehicles are the primary user of the Freight Route and Railroad system; however, these classifications have different implications for function. Regional Truckways are intended to facilitate interregional and movement of freight. Priority Truck Streets are intended to serve as the primary route for access and circulation in Freight Districts, and between Freight Districts and Regional Truckways. Major Truck Streets are intended to serve as principal routes for trucks in a Transportation District. Truck Access Streets are intended to serve as access and circulation routes for delivery of goods and services to neighborhood-serving commercial and employment uses. See more about the land use context for classifications in the Classifications section of the TSP.

The following figure highlights important freight routes and key freight terminals, including intermodal terminals.

Figure 18: Freight Routes and Terminals

[13] https://www.portland-tsp.com/#/streets

Safety

Portland has a Vision Zero team that has produced many detailed analyses and dashboards using historic crash data. Find more information on their website and in the Vision Zero Action Plan[14]. Crash histories for pedestrian and bicyclist-involved crashes were discussed in the bike and pedestrian modal inventories. This section covers all fatal and injury (Injury A) crashes as well as a discussion of crash risk factors.

The most recent five years of complete data at the time of the inventory is from 2019 to 2023. This does include the outlier year of 2020, which tended to show different trends than the other years due to impacts from the COVID-19 pandemic. The data, shown in Figure 19, shows 280 fatalities and 1,478 serious injuries over five years. Clusters of crashes pop out downtown and along streets on the City's High Crash Network, including Foster Rd, Powell Blvd, Stark St, Division St, 122nd Ave, and Columbia Blvd.

Figure 19: Fatal and Serious Injury Crashes

Certain characteristics of the roadway network contribute to increased crash risk and risk of harm to vulnerable road users such as people walking, biking, and rolling. These include speed, traffic volume, separation of facilities, and roadway width. Facility characteristics such as separated bike lanes versus painted bike lanes are addressed in the relevant sections on the bicycle and pedestrian system. Other roadway crash risk factors are presented here.

Roadway width is a key indicator of crash risk. Wider streets encourage faster speeds. They are also more difficult to cross and increase the exposure of pedestrians and cyclists. Roadway widths are mapped below and should be used in combination with the previously presented information on lane width and number of lanes to indicate increased crash risk.

Safe speeds are a key aspect of the Vision Zero approach and posted speed is also a crash risk factor. The faster cars are traveling, the increased likelihood of injury or death for people walking or biking if a crash occurs. Posted speed is used as a proxy for measured speed here. Note that posted speeds are not provided on freeways and other limited access facilities on this figure, since the focus for the crash risk factors is where pedestrians and bicyclists travel.

Traffic Volumes are also a key indicator of crash risk. When looking at average daily traffic volumes (ADT) on non-highway streets in Portland, there is a clear correlation between streets with over 12,000 ADT and streets on the High Crash Network. Increased traffic volumes mean increased exposure to vulnerable road users and increased opportunity for

[14] https://www.portland.gov/transportation/vision-zero/portland-vision-zero-action-plan

vehicle crashes. On local streets in Portland, daily volumes range from 1,000 - 6,000 vehicles per day. Collector streets generally carry more daily trips, connecting travelers to the arterials that end up on the High Crash Network carrying more than 12,000 vehicles per day. These crash risk factors all contributed to increased exposure to serious injury and death for all participants and the risk increases where these factors overlap.

Figure 20: Roadway Width

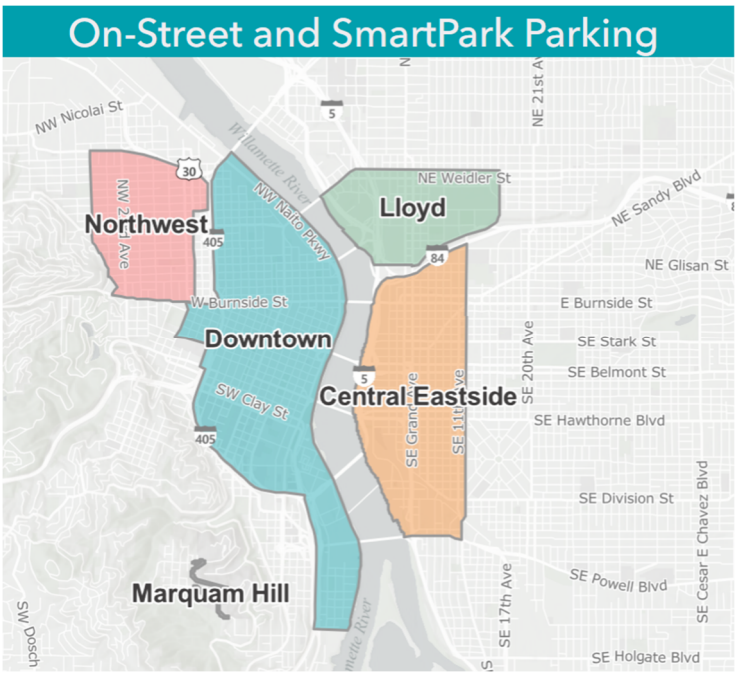
Figure 21: Posted Speed

Pricing

The City of Portland does not have specific roadway facility pricing, nor does it have area or cordon pricing. The City of Portland does price some on-street parking as well as providing parking in several paid off-street garages in downtown Portland.

Metered parking

The City of Portland has five metered parking districts in which users are charged an hourly rate during some days and times to park their vehicles.



Downtown District - Includes the Central Business District, South Waterfront and the Pearl District - $3.00 per hour 8 a.m. to 7 p.m., Monday through Saturday, and from 1 p.m. to 7 p.m. on Sunday except when the Providence Park event districts are active.

- **Event Meter District** - Next to Providence Park currently in effect on Portland Timbers and Portland Thorns home game days—$7.00 per hour beginning 3 hours before game start and ends 3 hours after game start.

Lloyd District - Bounded by the Willamette River, N/NE Broadway, NE 16th and the I-84 freeway. The district includes the Oregon Convention Center, Lloyd Center, Rose Garden Arena, Memorial Coliseum and Lloyd Business District—$1.80 per hour 8 a.m. to 6 p.m., Monday through Saturday, unless otherwise posted.

- **Event Meter District** - When there are large events that activate the Lloyd Event District, pay stations may require payment until 10 p.m. and/or on Sundays—$5.00 per hour depending on the start of the event.

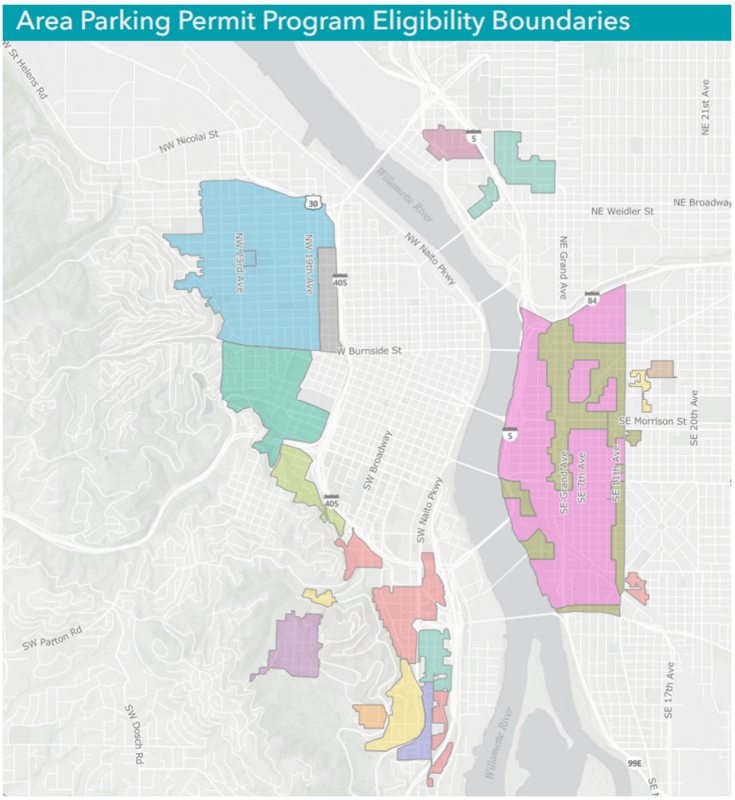
Marquam Hill District - Located on top of Portland's Marquam Hill, home to Oregon Health & Science University (OHSU), Shriners Hospital for Children, the Portland VA Medical Center and other healthcare organizations—$2.60 per hour 8 a.m. to 6 p.m., Monday through Friday.

Central Eastside District - Located on MLK Blvd. and Grand Ave. and the streets in between MLK and Grand from I-84 freeway to Clay Street—$2.00 per hour, 8 a.m. to 7 p.m., Monday through Saturday. Beginning on Oct. 15, 2025, payment will only be required until 7 p.m. each day.

Northwest District - Bounded by NW Vaughn (on the north), W. Burnside (on the south), NW Cornell and Westover Roads (on the west) and I-405 (on the east) —$2.60 per hour 9 a.m. to 7 p.m., Monday through Saturday unless otherwise posted. Event pricing is in effect for south of Irving Street for Timbers and Thorns home games, $7 per hour beginning 3 hours before game start and ends 3 hours after game start.

Area Parking Permits

The City of Portland has 20 Area Parking Permit Zones. Such zones were established in response to community concerns about commuter parking in neighborhoods.



Commuter parking originates from outside the permit area and has no apparent connection or business within the permit area. The program is designed to help people who live or work in areas with a commuter parking problem by creating a visitor time limit. Those who do have businesses or live in the area may apply to purchase a permit, allowing parking beyond the visitor limit. The base cost for the annual parking permits is $100. There are sometimes discounts depending on household income. Certain Area Parking Permit zones have additional surcharges determined by a zone-specific Stakeholder Advisory Committee. Such surcharges are in place for the zone to raise money for transportation improvements like multimodal infrastructure improvements or discounted use of transit, rideshare, or micromobility services. For a more detailed breakdown of the Area Parking Permit fees, please see Appendix A.

Smart Park parking garages

The City of Portland operates five garages in downtown Portland that supplement the publicly available parking supply. The focus of the garages is accommodation of short- and medium-duration stays to support regional visitors to businesses in downtown Portland. The pricing is structured accordingly.

Table 2: Smart Park garages, weekday parking rates

Garage	Weekday rates					
	1st hour	2nd hour	3rd hour	4th hour	All day (4+hrs)	Monthly/ swing shift*
Naito & Davis	$2.20	$2.20	$2.20	$2.20	$12.00	$232 / $36*
10th & Yamhill	$2.20	$2.20	$2.20	$2.20	$14.00	- / $36*
4th & Yamhill	$2.20	$2.20	$2.20	$2.20	$14.00	- / $36*
1st & Jefferson	$2.20	$2.20	$2.20	$2.20	$17.00	$271 / $36*
3rd & Alder	$2.20	$2.20	$2.20	$2.20	$14.00	- / $36*

Table 3: Smart Park garages, weekend and evening rates

Garage	Weekend and evening rates		
	Sun-Thursday evening maximum (5PM-5AM)	**Fri-Sat** evening maximum (5PM-5AM)	**Sat-Sun** daily maximum (day begins at 5AM)
Naito & Davis	$5 all night	$6 all night	$7 all day
10th & Yamhill	$5 all night	$5 all night	$7 all day
4th & Yamhill	$5 all night	$5 all night	$7 all day
1st & Jefferson	$5 all night	$5 all night	$7 all day
3rd & Alder	$5 all night	$5 all night	$7 all day

Air, Marine, Pipeline, and Rail Systems

Air

Portland International Airport (PDX), owned and operated by the Port of Portland, is the primary commercial air transportation facility in the region. The airport is located on approximately 3,200 acres of land about five miles northeast of downtown Portland and primarily serves the surrounding Washington, Yamhill, Clackamas, Multnomah, and Clark counties. The airport is served by 22 passenger airlines and nine cargo airlines. In 2025, more than 18 million passengers moved through PDX.

Water

There are commercial and recreational water transportation uses in or adjacent to the City of Portland. Multnomah Channel is used primarily for recreational purposes and the Columbia River for commercial purposes. Recreational activities are under the jurisdiction and authority of the Oregon State Marine Board. The commercial uses are under the U.S. Coast Guard.

The Columbia River is a significant transportation route for international trade activities conducted at a variety of ports upstream. The Port of Portland, at the confluence of the

Columbia and Willamette rivers, has three working marine terminals serving a wide variety of shipping needs including container shipping, break bulk, automobile shipping, grain and mineral bulks, dry bulks, liquid bulks, and high and heavy cargo, making the Port of Portland critical to the regional economy.

Rail systems

Portland is served by two Class I railroads: BNSF Railway and Union Pacific. Portland is also served by three regional and short line railroads: Portland and Western Railroad, Portland Vancouver Junction Railroad, Oregon Pacific Railroad. There are three large rail yards in Portland serving the Class I railroads: Albina Yard (Union Pacific) in north Portland, Brooklyn Yard (Union Pacific) in the Brooklyn neighborhood, and Lake Yard (BNSF) in northwest Portland. The mainline railroads connect Portland to destinations to the north (Seattle), east (Chicago, Minneapolis, Kansas City), and south (Eugene, Sacramento).

Pipeline

There are high pressure gas pipelines from Northwest Natural Gas and from Northwest Pipeline Corporation in Multnomah County. Northwest Natural Gas has several pipelines and a few high-pressure feeder pipelines in Multnomah County. Northwest Pipeline supplies gas to Northwest Natural Gas and primarily uses high-pressure pipelines.

Existing Needs Analysis

The City of Portland has policies and standards for the planned system for all modes. The Needs Analysis is a result of the difference between the planned system and the infrastructure inventory. Needs can be broken down into two different categories: gaps and deficiencies. A gap is where part of the system network is missing, whereas a deficiency is where part of the system doesn't meet standards. The following sections summarize the needs by mode. These needs will eventually inform the Major Capital Projects on the TSP Project List, which reflect solutions developed to address these identified needs.

Pedestrian Needs Analysis

State standards for the pedestrian system come from the Transportation Planning Rules (specifically OAR 660-012-0510) and are addressed in this section. In addition, there are regional policies for the pedestrian system that come from Metro's Mobility Policy and Designing Livable Streets and Trails Guide. The City of Portland's policies and standards support these regional policies and build on them to determine the local planned system, as summarized in PedPDX, the City's Pedestrian Plan.

PedPDX ensures walking is a safe, accessible, and attractive experience for everyone in Portland by putting pedestrians at the forefront of City policy, investments, and design. The objectives of PedPDX include:

- Prioritize investment in areas with the greatest historic underinvestment
- Complete and maintain a Pedestrian Priority Network that encourages walking for people of all ages, cultures, and abilities, and connects people to their essential daily needs
- Support the City's Vision Zero commitment to eliminate traffic-related deaths and serious injuries
- Protect the public safety and personal security of people walking

The planned pedestrian network in Portland looks like the full build out of the Pedestrian Priority Network as defined in PedPDX. It includes pedestrian facilities on both sides of the street where feasible to allow comfortable travel for all people. The Pedestrian Design Guide has guidance on building enhanced pedestrian facilities on pedestrian-centered corridors and in pedestrian districts. Both PedPDX and the Pedestrian Design Guide have guidance for planning for tree canopy. These documents also address designing for off-street paths as well as enhanced crossings and crossing spacing.

The following section documents the elements of the pedestrian system that constitute gaps or deficiencies (needs) in the current pedestrian system. The sidewalk facility gap map highlights missing segments of the Pedestrian Priority Network, which covers all pedestrian streets except for local service walkways. Sidewalks are the planned pedestrian facility for all streets above a local street classification. Local streets often qualify for alternative walkways due to their low traffic volumes and low vehicle speeds. An interactive version of this map can be found online based on PedPDX[15].

Figure 22: Sidewalk Facility Gap Map

Portland's standards for sidewalk width exceed those of state and regional guidance for 5-foot minimum width sidewalks. Portland guidance on pedestrian facility widths includes not just width of sidewalk but also furnishing zones and frontage zones, is based on the Street Design classification, and can be found in the Pedestrian Design Guide. New facilities are typically built to these standards, and older facilities are retrofitted when adjacent properties are redeveloped. As mentioned in the inventory section, about 70% of Portland's sidewalks are 5 feet or wider.

[15] https://experience.arcgis.com/experience/6b7f163f3afd449b8e32d39ffb1bbd7c/page/Sidewalk-Completeness

Portland's ability to equitably distribute tree canopy is significantly limited by current right-of-way configurations. In some neighborhoods, including several in North Portland, over half of the furnishing zones do not meet the current four-foot standard set in Portland's Pedestrian Design Guide. These configurations do not provide enough space for healthy street trees. In East Portland, there are many streets with missing sidewalks; these streets also lack furnishing zones and have no designated space for street trees.

The City of Portland's urban forest management policies support Oregon's Transportation Planning Rules and provide specific targets and implementation strategies to enhance tree canopy in pedestrian spaces and prioritize underserved populations. A few specific strategies as provided in the Portland Urban Forest Plan[16] can improve public health and safety for historically underserved populations by expanding tree canopy and providing space for healthy tree growth in the right-of-way. Along streets with substandard planting strips, bring narrow planting strips up to the standard (4' wide minimum). Along streets with no planting strips, construct sidewalks that meet or exceed standard furnishing zone widths or implement treatments supported by the Pedestrian Design Guide to depave and extend the furnishing zone into the curb zone. Along major arterials, where appropriate, add center medians with trees and other vegetation.

As a part of the CREEC/Portland Settlement Agreement, the City of Portland is required to ensure the installation or remediation of 1,500 curb ramps each year to increase the number and proportion of corners that have ADA-compliant accessible curb ramps. Of the 38,439 corners in the City of Portland, 10,449 have accessible curb ramps (as of 2025).

Crossing gaps are defined by Portland's marked crossing spacing standards in PedPDX. For City Walkways and Major City Walkways, marked crossings shall be spaced no more than 800 feet apart outside pedestrian districts and no more than 530 feet apart in pedestrian districts. In addition, it is recommended that there is a marked crossing within 100 feet of all transit stops. Given there are over 4,500 transit stops in Portland, this is a high bar to meet, but it is included in this crossing gap analysis to be conservative.

In addition to gaps in crossings, there are also crossing deficiencies, defined as existing crossings that aren't built to meet the crossing standards. Since every intersection is a legal crossing in Oregon, regardless of its markings, Portland has guidelines for where an enhanced crossing would be recommended. These guidelines are based on the number of lanes, posted speed limit, and average daily traffic of a roadway.

The following map shows where the crossing gaps and deficiencies are located on the Priority Pedestrian Network. Most local streets do not meet the standards for an enhanced

[16] https://www.portland.gov/trees/urban-forest-management-plan

crossing due to low speeds, number of lanes, and volumes. The crossing gap analysis in PedPDX found that approximately 3,520 new marked crossings may be needed to meet the City's crossing spacing guidelines. This includes the transit stop spacing recommendation. The average gap length is roughly one third of a mile, or 1,760 feet (over two times the largest spacing standard of 800 feet). Crossing deficiencies are also indicated on the map, but additional engineering analysis is needed to determine what level of crossing enhancement is needed.

Figure 23: Crossing gaps and deficiencies

In addition to the planned network based on state, regional, and local standards, a basic access analysis was performed to determine if there were any remaining gaps not documented. A quarter mile buffer was created around the existing pedestrian network to approximate network coverage of the pedestrian system. All Key Destinations as previously defined were covered by the buffered area. This doesn't mean there is no need when it comes to accessing key destinations, but at a high level there are no additional gaps to report.

Regarding safety needs of the pedestrian system, several crash risk factors were documented in the inventory section. These were roadway width, number of lanes, posted speed, and average daily traffic (ADT). This planning-level crash risk assessment will highlight several factors: total number of lanes greater than 3, posted speed greater than 30 mph, and greater than 12,000 vehicles per day. Portland's Vision Zero team has produced more in-depth analysis on safety needs, including identification of the High Crash Network, which can be found on their webpage[17]. This crash risk analysis highlights streets that mostly overlap with the High Crash Network (which is based on crash history). This combined network of city streets is identified as the location of safety needs.

Figure 24: Crash Risk Assessment

Bicycle Needs Analysis

State standards for the bicycle system come from the Transportation Planning Rules (specifically OAR 660-012-0610) and are addressed in this section. In addition, there are regional policies for the bicycle system that come from Metro's Mobility Policy and Designing Livable Streets and Trails Guide. The City of Portland's policies and standards support these regional policies and build on them to determine the local planned system, as summarized in the Portland Bicycle Plan for 2030, the City's most recent bike plan last updated in 2010.

[17] https://www.portland.gov/transportation/vision-zero

The Portland Bicycle Plan for 2030 (“bike plan”) envisions Portland as a world class bicycling city supporting a healthy community and vibrant neighborhoods. The recommendations include:

- Adopt recommended policies and classifications for bicycle transportation;
- Identify and pursue multiple funding strategies;
- Develop a street design guide with bicycle design guidelines;
- Expand encouragement programs to increase bicycling;
- Develop strategies to ensure successful delivery of bicycle projects; and
- Fund and construct projects in areas underserved by the bikeway network.

The planned bicycle system in Portland is a connected network that emphasizes direct access to destinations on main streets and commercial corridors. It includes bicycle facilities that provide a safe, low stress, direct, and comfortable experience for people of all ages and abilities. Portland bicycle design guidelines (in the Portland Traffic Design Manual) include the Protected Bike Lane Design Guide and incorporate NACTO’s Designing for All Ages and Abilities to provide guidance on building enhanced bicycle facilities where appropriate.

The following section documents the elements of the bicycle system that constitute gaps or deficiencies (needs) in the current bicycle system. Several sources were consulted to identify needs including the bike plan, more recent area planning, regional guidance, and state guidance.

To assess gaps in the bike network, two maps were created: one looks at general access to all destinations using a quarter-mile buffer, allowing for local street access; the second focuses on direct access to destinations on commercial corridors. For the first map, the existing and funded bike network was buffered by a quarter mile and layered over the Key Destinations. A quarter mile is assumed to be adequate access to local streets. This map shows the network buffer in blue, and the remaining areas are gaps in the bike network showing which Key Destinations are not accessible. There are some major gaps on the west side. In addition, there are several Key Destinations not accessible on the bike network including a community center in Northwest, a couple grocery stores (one in East Portland, one on Hayden Island), and about 16 schools. This network buffer doesn’t explicitly include local streets in the system, so more of these schools may be accessible by bike. However, this analysis shows the need for a comprehensive Safe Routes to School program.

Figure 25: Bikeway Access Gap Map

The bike plan specifically calls out the need for direct access to common destinations[18]. For the purposes of this analysis Key Destinations will be used as the source of "common destinations" and the Design Classification of Civic Main Street, Neighborhood Main Street, Civic Corridor, and Neighborhood Corridor are used to represent the "commercial areas" identified in the bike plan analysis. Key destinations within 250 feet of these commercial streets were selected as the pool of common destinations for this analysis. The existing and funded bike network was buffered by 250 feet and layered over the common destinations. The resulting map shows the network buffer in blue and the remaining common destinations not directly accessible. This analysis shows that about two thirds of common destinations on commercial streets are accessible by the existing bike system. 62% of grocery stores are accessible, leaving gaps of about 34 grocery stores not directly accessible on the main streets by bike facility. 60% of schools on main streets are accessible, leaving gaps of 12 schools not directly accessible by bike facility. This is just considering existing bikeways above local streets and how they connect to destinations on commercial corridors and main streets.

Figure 26: Bikeway Direct Access to Common Destinations

In addition to gaps in the network, there also are deficiencies in the existing bike system. Portland bike design guidance uses speed and average daily traffic to determine the appropriate bike facility. There's also guidance on width of facility depending on bicycle volumes. The minimum bike lane width is 5 feet for a one-way bike lane. Any new bike facilities built will be designed under these guidelines. About 15% of bike lane facilities have widths less than 5 feet. Some corridors that are identified by this analysis are 122nd Ave, 148th Ave, Woodstock Blvd, Duke St, Flavel St, Capitol Hwy, and Terwilliger Blvd.

Bike design guidance from Metro's Designing Livable Streets guide recommends buffered bike lanes where posted speeds are 25-30 mph and traffic volumes are less than 6,000 vehicles per day. When speeds and volumes are above those thresholds, protected bike lanes are recommended. Enhanced, separated facilities are recommended where deficiencies in existing bike lanes occur. This applies to several existing bike lane corridors in Portland including 122nd Ave, 148th Ave, the Stark St and Washington St couplet, and Interstate Ave. Additional high-speed corridors with bike lane separation deficiencies include Airport Way, Marine Dr, outer Sandy Blvd, outer Foster Rd, NE Lombard St, St Helens Rd, Barbur Rd, and Terwilliger Blvd.

[18] Portland Bike Plan, page 43 https://www.portland.gov/sites/default/files/2020-04/portland_bicycle_plan_for_2030_as-adopted.pdf

Portland's design guidance for neighborhood greenways (bike boulevards) recommends a daily vehicle threshold of 1,000 vehicles per day, accepting up to 1,500 vehicles per day. At 2,000 vehicles per day changes must be made. An inventory of recent traffic count data on neighborhood greenways showed that 72% of greenways met the 1,000 vehicles per day threshold and 97% of greenway segments met the 2,000 vehicles per day maximum acceptable threshold. Greenway segments identified that exceed the recommended daily traffic thresholds indicate further need for appropriate traffic calming infrastructure such as speed bumps, protected crossings, and diverters.

Regarding crossing gaps and deficiencies for the bicycling system, see the analysis performed under the pedestrian system. The pedestrian crossing distances may be more inclusive than what is desired for a complete bike system. For instance, the 100-foot crossing distance at transit stations may not be a priority for the bike system. Crossings along the bike network will be the highest priority for the bike system.

Additionally, the crash risk factors analysis performed for the pedestrian system applies to the bike system as well. See the Vision Zero website to dig deeper into pedestrian and bicycle crash patterns.

Transit Needs Analysis

State standards for the transit system come from the Transportation Planning Rules (specifically OAR 660-012-0710) and are addressed in this section. In addition, there are regional policies for the transit system that come from Metro's Regional Mobility Policy, Regional Transit Strategy, and High-Capacity Transit (HCT) Strategy in the Regional Transportation Plan (RTP). TriMet, the major transit provider in the City, has their own policies regarding their transit system. The City of Portland supports these regional policies and coordinates with service providers to determine the local infrastructure projects that can support the transit system.

Recent transit planning efforts in the City of Portland include the Rose Lane Project adopted in 2020[19], which came out of the Enhanced Transit Corridors Plan[20] adopted in 2018, Growing Transit Communities Plan adopted in 2017, and the Montgomery Park Streetcar Extension Plan[21]. TriMet has also done transit planning to support their transit system with the FX and Forward Together[22] planning efforts.

[19] https://www.portland.gov/transportation/rose-lanes
[20] https://www.portland.gov/transportation/planning/enhanced-transit-corridors-plan
[21] https://www.portland.gov/transportation/planning/montgomery-park-streetcar
[22] https://trimet.org/forward/

The planned transit system in Portland is a network of various modes (light rail, bus, streetcar) that serve key destinations and provides a cost-effective, climate-friendly, efficient way for Portlanders to travel. The transit network is made up of transit lines and transit service, which is operated by the transit provider. The transit network is also reliant on city-owned infrastructure like roadways, sidewalks, and traffic signals. The planned transit system runs on transit corridors, with Priority Transit Corridors being defined as corridors with frequent service bus lines or light rail or streetcar service. In Portland, the Priority Transit Corridors overlap with the Transit Classifications of Major Transit Priority Street and Regional Transitway discussed in the inventory section.

Transit system gaps include new service planned through the Metro RTP, High-Capacity Transit Strategy, TriMet's Forward Together future service concepts and FX System plan envisioned in the TriMet Road Ahead (referenced in this document as "Forward Together"), and Portland Streetcar planning work. This includes expansion plans like the Portland to Vancouver light rail line and the Montgomery Park Streetcar extension, and it also includes new bus lines.

Another way to identify transit gaps is through measuring access to destinations. Access to key destinations via the existing transit system was analyzed to identify any access gaps. The access to transit standard from the Metro Regional Transit Strategy is a quarter mile of a bus line, a third mile of a streetcar stop, and a half mile of a MAX light rail stop. As in the Bike Needs section, the existing transit lines were buffered by the appropriate distance and then layered on top of the Key Destinations to determine which destinations are not accessible by transit under existing conditions (Fall 2025). The following figure shows the access results which reveal all key destinations are accessible via transit except for 13 schools.

Figure 27: Access Gaps via Transit

Transit system deficiencies include improvements in service such as upgrading the frequency of a line to frequent service, upgrading a bus line to a Bus Rapid Transit line (branded as FX in the TriMet system), and other upgrades including stop amenities, vehicle types, and turnaround and layover facilities. These are mostly determined by the service provider. The city can also identify deficiencies as transit-supportive facility needs which include station upgrades, stop placement, adding stop amenities, and implementing transit priority infrastructure (e.g., signals, queue jumps, transit signal priority, exclusive or priority transit lanes). Transit supportive facility needs are summarized in the Rose Lanes

Project map[23] and are also based on monitoring transit operations over time for delay and unreliability.

Transit system deficiencies also include access to transit stops themselves for people of all ages and abilities. Many transit stops are not accessible to get to for all riders or do not meet ADA design guidance. This could be because of a lack of sidewalk facilities, curb ramps, a level landing area served by the front door of the bus, or other missing accessible infrastructure. In 2024, TriMet produced some materials around accessibility with their Stop Accessibility Project. This work used a needs analysis to prioritize top stops and lines with high demand and high need for accessible stops. Some of the prioritized routes in Portland include Lines 6, 25, 73, 74, 77, and 87. The work is ongoing and will inform future stop improvement projects, likely linked with other transit projects around the city. The City of Portland has performed internal planning work building on TriMet's Stop Accessibility Project to determine the locations of bus stops where the bus cannot pull up to the curb to serve passengers at the sidewalk and to prioritize clusters of stops as high priority needs (to remove on-street parking and provide bus access to the curb). Note that these clusters align with some of the routes identified above.

Figure 28: Transit Access to the Curb

Roadway Needs Analysis

State standards for the roadway system come from the Transportation Planning Rules (specifically OAR 660-012-0810) and are addressed in this section. In addition, there are regional policies for the roadway system that come from Metro's Mobility Policy in the 2023 Regional Transportation Plan (RTP). ODOT has jurisdiction over the highway system within the city and Multnomah County operates many of the bridges that cross the Willamette River. The City of Portland supports these regional policies, coordinates with jurisdictional partners, and maintains local roadway and freight standards.

The planned roadway network in Portland is based on recent planning efforts such as Master Street Plans, Area Plans, and the 2040Freight Plan. The Intelligent Transportation System (ITS) Plan has a planned network for the ITS and signals network. The Vision Zero Action Plan addresses safety needs on the roadway network.

The roadway network in Portland is mostly built out so there are relatively few gaps. Master Street Plans identify new local street connections that are needed as development occurs. See the figure below that summarizes the new local street connections which are concentrated in the southwest, East Portland, Hayden Island and St Johns. Portland has

[23] https://experience.arcgis.com/experience/0f0cddc471d446788a7ebbfaf0ac8bb9/

cross section standards and local street design standards as outlined in the Traffic Design Manual and the PBOT Development Review Manual to Creating Public Streets and Connections[24]. The Development Review Manual is in line with state guidance to reduce excessive standards for local streets in order to increase safety, provide for more efficient land use, support connected pedestrian and bicycle networks, and provide for emergency vehicle access while discouraging inappropriate traffic volumes and speeds.

Figure 29: New Local Street Connections

Recent area planning work helps the city plan for a connected roadway system that makes efficient use of the right-of-way, is built to the minimum size necessary for the intended function, and prioritizes pedestrian, bicycle, and transit systems in Climate Friendly Areas. New area plans since the last TSP update include Northwest in Motion, North Portland in Motion, Lower Southeast Rising, East Portland Arterial Streets Strategy, Columbia-Lombard, Building a Better 82nd Ave, and West Portland Town Center. These area plans identify needs in the roadway network which make their way into the TSP as classification updates and projects.

The roadway functional classification will be updated as a part of this TSP update. Updates come from the aforementioned Area Plans, but they also come from deficiencies in spacing standards. Using the Federal Functional Classification presented in the existing conditions inventory section and regional spacing guidelines, an analysis was done to determine if there are deficiencies in the arterial and collector street spacing. Portland is generally built out in the core of the city and must work around topographical challenges, so some spacing deficiencies may not be addressed. From a high-level spatial analysis, there is a collector or arterial every half mile to mile in the city in the Federal Functional Classifications, except for where there are topological barriers. This doesn't match how the Traffic classifications in the TSP are set up, both in linework and naming convention. So, some adjustments may be needed to the Traffic classifications to better match the Federal Function Classification collector and arterial naming convention to meet spacing guidelines.

A comprehensive needs analysis for the freight network was performed in 2040 Freight, Portland's Freight Plan (adopted in 2023). The freight plan documents existing conditions of the freight system, identifies needs of the system, prioritizes the needs, and develops a prioritized project list. The five areas that informed the analysis were safety, system condition, access, efficiency, and economic vitality. Maps 23-26 in the freight plan reflect

[24] https://www.portland.gov/transportation/documents/pbot-development-review-manual-creating-public-streets-and-connections-0/download

the scoring of these different need areas from high to low need throughout the city. Economic vitality is measured by both the access and efficiency needs metrics.

Coordination with regional and state partners was necessary to identify further needs on the roadway network, especially to identify future projects that will be subject to an enhanced review process based on OAR 660-012-0830. The Port of Portland has a need that will develop into the 82nd Ave and Airport Way Grade Separation project. This project will grade-separate eastbound Airport Way over 82nd Avenue to reduce intersection signal phase competition, merge northbound left-turners with westbound traffic without a traffic signal and reduce cross traffic exposure for bicycling and walking across Airport Way.

Additionally, ODOT has two needs that will develop into two projects that will be subject to enhanced review: I-5 Southbound Truck Climbing Lane and Hwy 26 to I-405 Operational Ramp Improvements. The first project will include Preliminary Engineering and Right-of-Way and Construction phases of building I-5 Truck Climbing Lanes in the southbound direction from Marquam to Multnomah Blvd. The second project will add a second lane to the US 26 Eastbound to I-405 Southbound ramp, creating an option lane with the exit ramp to SW Market St. Additionally, it will close the Montgomery St entrance ramp to I-405 Southbound. The two entrance ramp lanes from US 26 Eastbound will connect to the SW Broadway exit (inside ramp lane will have the option to exit, similar to existing conditions).

Finally, the last need for the roadway network is safety. Much safety planning work has been performed by the Vision Zero team and referenced multiple times in this report. Crash history was presented in the inventory section. This section references all the Vision Zero planning work to identify focus areas for safety needs. The Vision Zero High Crash Network, shown in the following figure, represents the corridors of the roadway network as well as the high crash intersections with the highest safety need.

Figure 30: Vision Zero High Crash Network

Urban Pockets Needs Analysis

The City of Portland is partially responsible for understanding and addressing the transportation system needs in what are known as Urban Pockets, areas of unincorporated Multnomah, Clackamas, and Washington Counties for which the City of Portland must coordinate with the counties to provide some urban services and perform land use planning. In most cases, the City and County have jointly identified transportation system needs and potentially responsive projects.

Figure 31: Urban Pockets

Washington County Urban Pockets Needs

Washington County performs the planning for these unincorporated pockets as a part of its county-wide Transportation System Plan, including the documentation of needs and inclusion of projects to meet those needs. This process involves coordinating with the City of Portland on needs analysis and project evaluation, especially for streets that span both jurisdictions. Portland's Transportation System Plan does not document the transportation system needs in the Washington County Urban pockets.

Multnomah County Urban Pockets Needs

The Transportation System Plan for the Urban Pockets of Multnomah County adopted in 2005 identified many still-unmet needs for the roadway, pedestrian, and bicycle system. Busy arterial roadways still lack sidewalks and bike lanes where the context suggests they are needed, for example along SW Palatine Hill Rd, SW Terwilliger Blvd, SW Scholls Ferry Rd., SE Barbara Welch Rd, and NW Miller Rd.

Clackamas County Urban Pockets Needs

Clackamas County performs the planning for these unincorporated pockets as a part of its county-wide Transportation System Plan, including the documentation of needs and inclusion of projects to meet those needs. This process involves coordinating with the City of Portland on needs analysis and project evaluation, especially for streets that span both jurisdictions. Portland's Transportation System Plan does not document the transportation system needs in the Clackamas County Urban pockets.

Future Conditions

This section summarizes the year 2045 future conditions for the transportation system and the resulting identified needs based on the application of performance standards. This summary of needs supplements the existing conditions needs analysis and other previous planning efforts in identifying a full range of system needs. Future memoranda will develop and evaluate projects to meet these needs.

Future travel demand modeling was performed with Metro's Regional Travel Demand Model (RTDM) for the financially constrained scenario from the most recently adopted 2023 Regional Transportation Plan. Portland also maintains a subarea model of the Metro RTDM that has a more disaggregated network and zone system within the city limits but maintains the same population and employment forecasts. This model was used for some supplementary analysis.

Major projects adding capacity to the vehicle transportation system in Portland include the Interstate Bridge Replacement Project and the I-5 Rose Quarter Project. These are included in the Future Year Model for this TSP update. Given the current political climate and legislative action going on against the regional tolling program, known as the Regional Mobility Pricing Program (RMPP), this project is unlikely to be included in the 2028 RTP update and is not included in the future conditions modeling for this TSP update. Since the tolling program did have a positive impact on reducing vehicle miles traveled (VMT), this assumption provides a conservative approach to the modeling as omitting it will show a lesser reduction in VMT.

In the future, population in the City of Portland is expected to grow 13 percent for a forecasted population of 787,800 in 2045. This is equivalent to an annual growth rate of about half a percent per year. Employment or number of total non-seasonal jobs is forecasted to grow 18 percent to 567,600 jobs in 2045. These forecasts are sourced from the 2023 RTP and were performed amid the COVID-19 pandemic, however newer forecasts have shown a static population growth in Portland and in Oregon state-wide. As a result of static growth rates and increases in work from home rates, future vehicle volumes -- especially in the peak hours -- may not reach the heights of pre-pandemic era volumes.

Shifting climate realities will increasingly dictate how and when Portlanders travel. Regional climate projections indicate hotter, drier summers with more extreme heat days, increased seasonal wildfire smoke, and warmer winters characterized by more intense, concentrated rain events. These conditions will directly impact travel behavior; for example, extreme heat and poor air quality days may temporarily suppress active

transportation (walking and biking) and shift demand toward air-conditioned transit or personal vehicles.

Vehicle miles traveled is a performance measure that will be analyzed in future conditions with the financially constrained project list from this TSP update later in the Performance Measures step. Under several of the state rules, the TSP can only be adopted "if the projected vehicle miles traveled per capita at the horizon year using the financially constrained project list is lower than estimated vehicle miles traveled per capita in the base year scenario."[25] The Metro RTDM was used to calculate household-based VMT per capita for this measure. This measure reflects vehicle miles traveled by people who live in Portland averaged over the city population. The household-based VMT per capita for the City of Portland under existing year conditions is 13.3. The future baseline number from the 2045 financially constrained model (as defined above) is 12.8, a decrease of four percent from existing year. The VMT performance measure will be updated for 2045 with the updated TSP financially constrained project list after the project list has been determined.

The updated TPRs also place a smaller emphasis on vehicle congestion and a stronger emphasis on increasing non-automobile travel. As a result, the City of Portland has updated the future performance standards applied to the transportation system to move away from traditional Volume/Capacity (v/c) ratio and intersection analysis to identify future needs. The following sections discuss these performance standards and how they will be applied for the future needs analysis. Remember, these "performance standards" do not replace any other design standards, but are used to identify additional future needs in this step of the TSP update process.

Performance Standards

The Transportation Planning Rules require cities to adopt transportation performance standards used to review comprehensive plan and land use regulation amendments (OAR 660-12-0215). These performance standards must support meeting state and regional performance measures. At the state level, ODOT has provided guidance on potential performance standards in their TSP Guidelines. At the regional level, these performance standards must support Metro's Climate Smart Communities adopted scenario and Mobility Policy established in the 2023 RTP.

Additional requirements for the performance standards include selecting two or more standards where at least one must support increasing transportation options and avoiding principal reliance on the automobile. The performance standards must evaluate at least

[25] OAR 660-012-0160

two of the following objectives for the transportation system, for any or all modes of transportation:

(a) Reducing climate pollution;

(b) Equity;

(c) Safety;

(d) Network connectivity;

(e) Accessibility;

(f) Efficiency;

(g) Reliability; and

(h) Mobility.

Based on this guidance, the City of Portland has selected System Completeness and Intersection Density as its two performance standards. These two performance standards are defined more thoroughly below. They were chosen because they apply to all modes, they both support increasing transportation options and avoiding principal reliance on the automobile, and they are directly tied to the Metro Mobility Policy. They address many objectives in the list above including network connectivity and accessibility.

System Completeness

System completeness is a measure comparing the planned network for each mode to the existing network. This is based on the gaps analysis performed in the existing conditions section for each mode.

The planned system is defined through system planning at the local and regional level. This standard is correlated to one of the three measures in the Metro Mobility Policy established in the 2023 RTP, which relies on the Designing Livable Streets and Trails Guide, the High-Capacity Transit Strategy, and various area, corridor, and modal plans to define a complete system.

A baseline will be established as a percentage complete of each existing modal network. For example, if there are 1,000 miles of sidewalk in the city and 2,000 miles of roadway where there should be a pedestrian facility, then the share of existing system completion is 50%. This metric identifies remaining need for system completeness. The intent is to address network gaps working towards a complete multimodal transportation system.

Intersection Density

Intersection density is a measure of connectivity of the street network. A well-connected network is characterized by many short blocks, more intersections, and minimal dead-ends. As connectivity increases, travel distances decrease and route options increase, allowing more direct travel between destinations and creating a more accessible transportation system. Connectivity is a foundational element of community health. Global public health research indicates that well-connected neighborhoods are associated with an 80% probability of residents engaging in walking for travel, significantly boosting their ability to meet the World Health Organization's guideline of 150 minutes of weekly physical activity.[26]

Street connectivity requirements are set out in Portland's Comprehensive Plan and City Code. These connectivity standards support regional and state requirements for building well-connected streets (Metro RTFP 3.08.110.E). The connectivity standards are defined in Title 17 of City of Portland Code as follows:

> **"**Provide for street connections no further apart than 530 feet, except where prevented by barriers such as topography, railroads, freeways, pre-existing development, or natural features where regulations do not allow construction of or prescribe different standards for streets" (17.88.040.C.2)

These connectivity requirements specifically apply to undeveloped (or redeveloped) land parcels and land division permits, but may also be applied to other parts of the city with the appropriate context.

For the purposes of this performance standard to identify future needs, "intersection density" will be calculated as a spacing distance, where the standard for roadway links is to be no longer than 530 feet without an intersecting connection. This standard will be applied to establish a baseline that will be used to identify future needs.

Future Needs Identification

This section compares future conditions against the above performance standards and identifies where conditions would fail to meet performance standards. These conditions would constitute additional future needs (in addition to the Existing Needs Analysis) that will be incorporated into the project development step.

[26] https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(22)00068-7/fulltext

System Completeness

As defined above, system completeness was assessed on existing modal networks in Portland to create a baseline for this standard. To apply to the multi-modal system the System Completeness standard was split into multiple components (metrics). Results of the analysis are provided in Table 4.

For the pedestrian system, the existing conditions inventory of pedestrian facilities was compared to the planned network of pedestrian facilities on all streets in the city (both sides) except where topological boundaries exist. Two percentages were reported: one for priority streets (defined as the Priority Pedestrian Network from PedPDX) and one for remaining local streets.

For the bicycle system, the existing conditions inventory of all bicycle facilities was compared to the planned network of bicycle facilities based on the bikeway classifications and recent planning efforts to refine the network.

For the transit system, the existing conditions inventory of transit line mileage was compared to the planned network of transit lines based on the Metro Regional HCT Strategy, Regional Transit Strategy, and recent TriMet planning (e.g., Forward Together). There are approximately 55 existing transit lines in Portland totaling about 520 miles, and after adding future HCT lines and other transit service, there are about 590 miles of transit network complete transit network.

For the motor vehicle system, spacing of arterial and collector streets was compared to the planned network based on regional spacing standards. As indicated in the Roadway Needs Analysis section, the Portland collector and arterial network is mostly built out. Local street connections mapped in that needs section will be built as development occurs or in coordination with public projects. They are included in an estimate of length for the complete roadway network. For the ITS system, the existing network of ITS corridors was compared to the planned system as defined in the ITS System Plan and subsequent planning work.

Table 4: System Completeness Metrics

Metric	**Share**
Share of the pedestrian network completed	67% priority, 52% local
Share of the bicycle network completed	47%
Share of the transit network completed	88%
Share of the motor vehicle network completed	99%
Share of ITS network completed	58%

Comparing these system completeness metrics to the planned system (100 percent complete) indicates there are remaining system completeness needs. These needs may overlap with other needs already identified in the Existing Needs Analysis. As a summary of the needs, around 300 miles of sidewalk needs to be built on priority streets and 1,900 miles of local pedestrian facility infill is needed to reach 100 percent completeness. Note that pedestrian facilities appropriate for low-volume, low-speed local streets may include alternative walkways besides sidewalks, which should count towards this threshold. The planned bicycle network, based on classifications, is about halfway to being completed in the baseline and needs about 500 more miles of bike facilities to reach completeness. The transit system needs include about 70 miles of additional transit service via HCT projects and other transit projects that are a part of the future system plan. These include the Portland to Vancouver light rail project, 82nd Avenue Transit FX project, and two Streetcar extension projects. For roadway needs, there are about 20 miles of local street connection needs that will be fulfilled when private or public development occurs as identified in the Roadway Needs Analysis section. Finally, the ITS system needs include 18 more ITS corridor projects to fill out the planned system. Projects will be developed to meet these needs in a later step in the process.

Intersection Density

As defined in the above section, this metric applies to roadways, but it impacts multiple modes. For the purposes of this analysis, a spacing standard will be applied to the roadway link lengths and compared to the connectivity standard. Pedestrian connectivity standards are best applied at the crossing-level analysis (see Existing Conditions section) or when development occurs.

When assessing the roadway links in Portland in a GIS spatial analysis the average roadway length is 343 feet. This meets the spacing standard of a roadway connection every 530 feet. 60% of the roadway segments range from 200-530 feet in length. 15% of segments exceed the spacing standard in code. These roads include industrial access roads and roads through parks or natural spaces (e.g., Forest Park, Mt Tabor, etc.), where the context allows for longer spacing. Due to development history, areas of need also include parts of outer East Portland and Southwest Portland. As stated above, this spacing standard mostly applies to land redevelopment or division, as it occurs. Master Street Planning has been performed in these areas that identifies local street connectivity needs. This intersection density performance standard highlights these local street connectivity needs as mapped in the Roadway Needs Analysis section.