Designing **Livable Streets and Trails** Guide

Metro

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Kittelson and Associates
Greenworks
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KLiK Concepts

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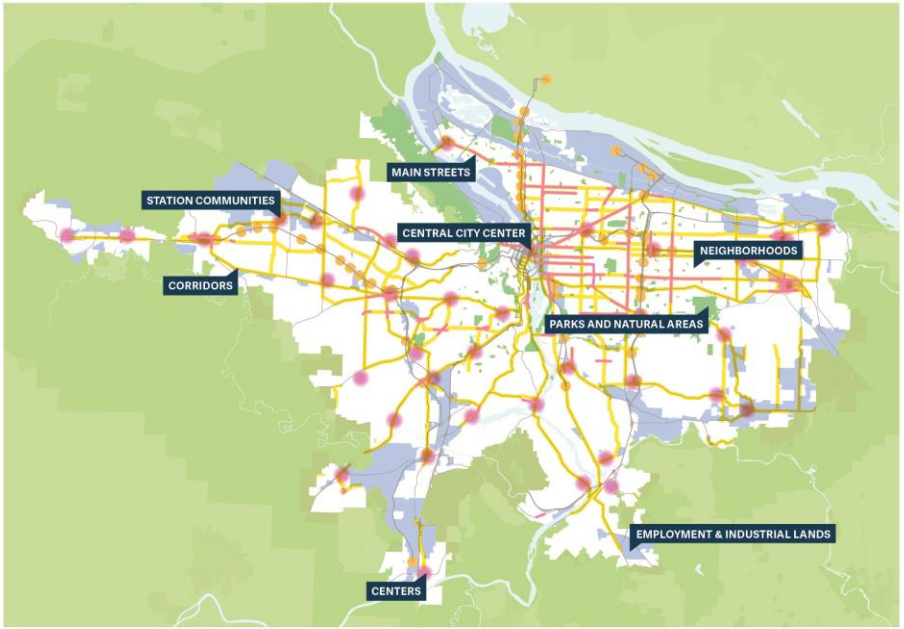
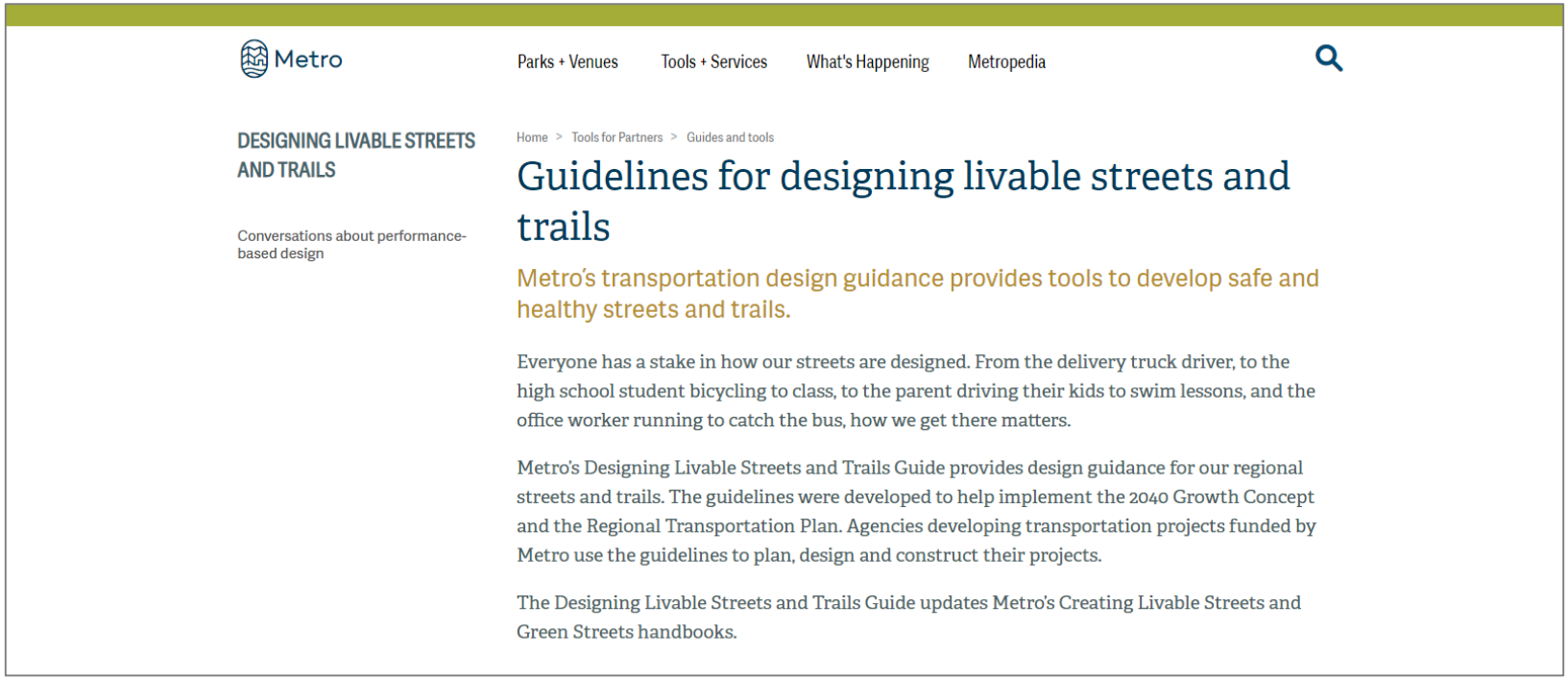
The Guide helps implement regional policies



The **2040 Growth Concept** is based on a series of land use components, called 2040 land use design types, that are the building blocks for managing growth. The land use design types are identified as centers, station communities, corridors, main streets, neighborhoods, employment and industrial lands, and parks and natural areas. Regional street design classifications correspond to the different land use design types and help implement the 2040 Growth Concept.



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Purpose and structure

When, why and how to use the Guide

1.1 Purpose of the guide

The purpose of this guide is to support implementation of the 2040 Growth Concept, which is the region's land use vision, and the *Regional Transportation Plan* (see **Chapter 2**). Along with these and other local and regional plans and policies, this guide is a resource for the agencies responsible for designing, constructing and maintaining the region's transportation system. The design guidance is intended to assist in designing new and reconstructed streets and trails, but may also be applied to maintenance projects that preserve and extend the service life of existing streets and structures when minor retrofits are needed. The guide will also be of interest to members of the public, elected officials, private developers, architects, landscape architects, planners and engineers.

This guide replaces and updates Metro's *Creating Livable Streets* and *Green Streets for Stormwater Management* guidebooks.

While the design approach included in this guide will interest communities across the country, they were identified specifically to support developing regional streets and trails consistent with the regional street design classifications adopted in the *Regional Transportation Plan* (see **Chapter 2**). Metro's other design guidebooks, *Trees for Green Streets*, *Wildlife Crossings* and *Green Trails*, provide additional resources.

Livable streets and trails...

- include safe places to travel for people of all ages and abilities
- provide orientation, safety and comfort
- encourage slower travel speeds
- are welcoming, safe spaces for people of all backgrounds and walks of life
- provide places to interact and linger
- foster a sense of community, ownership and responsibility
- protect the environment, avoiding sensitive habitat, protecting fish and wildlife, and minimizing light, noise, water and air pollution
- adapt to new mobility technologies to prioritize safety and access for everyone
- are resilient in the face of a changing climate, natural disasters and extreme weather events

What are regional streets and trails?

Streets and trails identified as "regional" in Metro's *Regional Transportation Plan* typically carry the most trips and connect to regional destinations. They are identified on regional network policy maps. Along with rail and streetcar lines, regional streets and trails serve as the backbone of greater Portland's transportation system.

Regional streets accommodate regional through trips as well as local trips. Regional streets connect centers and extend to places outside of the region. Under the traditional street functional classification system, regional streets are arterials and throughways. Serving both regional through trips and local trips distinguishes regional streets from collectors and local streets, which serve only local access trips. Regional streets are assigned a regional design classification in the *Regional Transportation Plan*. Refer to **Chapter 2** for a description of regional street design classifications.

Regional trails connect multiple destinations such as centers, parks and natural areas, transit and other regional trails. They serve as important transportation connections for people walking and bicycling, and support longer bicycle trips, often traversing more than one jurisdiction. Regional trails must be at least 75 percent off street and meet several criteria to be identified as regional.

1.2 Structure of the guide

This guide is organized so each chapter's themes build on material introduced in previous chapters. **Design elements**, found in **Chapter 4**, are combined to support the various **functions** of streets and trails identified in **Chapter 3**. Different functions are prioritized depending on the planned land use context and other policies to achieve desired **outcomes** identified in **Chapter 2**. Renderings and cross-sections in **Chapter 5** provide examples of how design elements are applied in different contexts to support the various functions of streets and trails. Each chapter includes information that may be referenced in the step-by-step performance-based planning and design decision-making approach outlined in **Chapter 6**. Cross-references and links to relevant chapters and sections are provided throughout, allowing the reader to access the material in a non-linear fashion.

Design elements support **functions** to achieve **outcomes.**

Pedestrian realm
- Sidewalks
- Street corners

Travelway realm
- Flex zone
- Motor vehicle travel lanes
- Access management
- Medians
- Speed management treatments

Green streets and stormwater management
Bikeway design
Transit design
- Transit stops and stations
- Transit priority treatments

Intersections and crossings
- Signalized intersections
- Roundabouts and mini-roundabouts
- Unsignalized intersections
- Enhanced and midblock crossings

Regional trails
- Regional trail design principles
- Multiuse paths
- On-street trail connections

Street and trail lighting
Wayfinding
Placemaking elements

Pedestrian access and mobility
Bicycle access and mobility
Transit access and mobility
Freight access and mobility
Motor vehicle access and mobility
Placemaking and public space
Green streets and stormwater management
Utility corridors
Physical activity
Emergency response

Safety
Security
Transportation choices
Efficient and reliable travel
Healthy people
Healthy environment
Reduce greenhouse gas emissions
Sustainable economic prosperity
Racial and social equity
Vibrant communities
Resiliency
Fiscal stewardship

Policy framework

Policies supporting a outcomes-based transportation design

2.2 Regional street design classifications

This section describes the purpose, function and land use relationships for the regional street design classifications. Metro developed regional street design classifications to support the range of transportation needs of the different land use design types in the 2040 Growth Concept. These were adopted into the *Regional Transportation Plan* in 1996 to help implement regional land use and transportation goals. The Regional Design Classifications map in the *Regional Transportation Plan* applies the classifications to the arterial and throughway network.

In addition to design classifications, the *Regional Transportation Plan* includes functional classifications for the different modal networks: pedestrian, bicycle, transit, freight and motor vehicle. All these modal networks are assigned primarily to the same regional street network, which is made up of major and minor arterials and throughways. The transit and bicycle networks include some local and collector streets, and the pedestrian and bicycle networks also include regional trails. The modal functional classifications provide policies for street design and function to serve the different modes of travel.

Regional street design classifications are based on the land use design types and informed by the modal network classifications. Regional design and functional classifications apply to local transportation system plans throughout greater Portland. Cities or counties typically adopt the classifications into their plans or provide a cross-reference if they use different terms for the classifications. Regional street design classifications are assigned to all throughways and major and minor arterials in the regional transportation system. While the design classifications only apply to arterials and throughways, this guide's design guidance can be applied to any street or trail.

Freeways and highways

Freeways and highways connect major activity centers, including the central city, regional centers, industrial and employment areas, and intermodal facilities such as the Port of Portland. Freeways and highways provide intercity, interregional and interstate connections. This design classification prioritizes long-distance and higher speed freight, motor vehicle and transit mobility. Freeways are grade separated; highways have a mix of grade-separated and at-grade intersections. Freeways and highways cross all types of land uses, and buildings are typically not oriented to these facilities.

RIGHT-OF-WAY
110'+

RIGHT-OF-WAY
100'-135'

+ Based on available width

2.4 Design for desired outcomes

Street and trail design directly affects greater Portland's quality of life. Under a performance-based approach, streets and trails are planned and designed to help achieve regional and community outcomes.

Safety

Streets are planned and designed so people walking, parking, shopping, bicycling, working and driving can cross paths safely. Streets are designed to slow traffic in urban areas, provide safe crossings, increase separation of travel modes and provide protection for vulnerable users to achieve Vision Zero—the elimination of deaths and life-changing injuries from traffic crashes.

Security

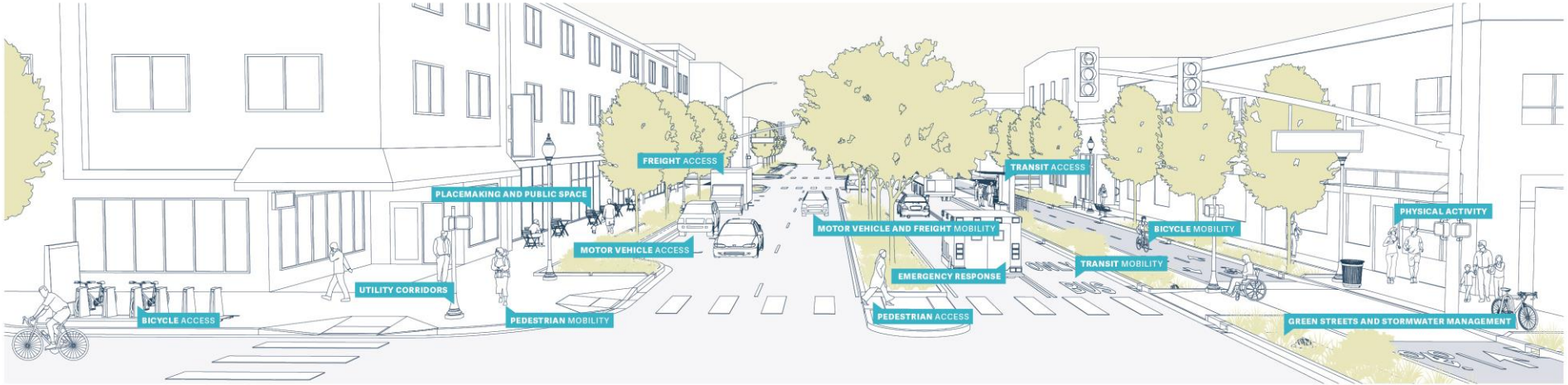
Streets and trails are welcoming, safe places for all people to use. Design elements such as lighting and culturally relevant public art and placemaking are used to deter crime and harassment. Activating streets and trails provides more eyes on the street and increases personal security.

Transportation Choices

Streets and trails are designed to provide a variety of transportation choices that are safe, comfortable and easily accessible. Universal design ensures that walking, bicycling, transit, rideshare services and other emerging options are equally accessible to people of all ages and abilities. The availability of a variety of transportation choices helps lower vehicle miles traveled.

Design functions

How we use our streets and trails



Pedestrian
ACCESS AND MOBILITY

Every street and trail has safe, comfortable space for people walking, rolling and enjoying the place they're in.

Bicycle
ACCESS AND MOBILITY

Connected bicycle networks, separated from heavy vehicle traffic, ensure that bicycling is a great way to get around communities.

Transit
ACCESS AND MOBILITY

Streets enable transit to serve the region with an efficient, reliable way to travel between and within communities.

Freight
ACCESS AND MOBILITY

Key freight corridors provide reliable freight movement, and streets allow delivery access to serve both businesses and residents.

Motor Vehicle
ACCESS AND MOBILITY

Streets and throughways provide for safe, reliable travel in motor vehicles, providing space to facilitate pooled or shared trips.

Placemaking and Public Space

Streets and trails are a canvas for community life and daily commerce, helping to form regional identity.

Green Streets and Storm-water Management

Weaving nature and sustainable stormwater management into streets and trails enhances livability and protect water, air and natural assets.

Utility Corridors

Transportation corridors move more than just people and goods; they also move water, power, gas, communications and information.

Physical Activity

Streets and trails are places where people enjoy exercising and spending time outdoors whether for recreation or to get to where they need to go.

Emergency Response

In case of a local or widespread emergency, streets and throughways must provide access and evacuation routes to keep people safe.

Design principles

Used to guide design decisions to achieve desired outcomes

Design:

- Using the safe systems approach
- Using target speeds
- For all users
- For personal security
- For connectivity
- Using flexibility
- To protect the environment
- For the future

Design elements

Preferred approach to designing regional streets and trails

Transit priority treatments

Design treatments that increase the reliability and efficiency of transit are called transit priority treatments. Priority treatments can be made systemwide, along entire corridors or at specific hotspot locations depending on need.

Transit service is provided by a wide variety of vehicle and service types and corridor designs. Commuter rail (for example, WES) typically operates on a separate right-of-way. Light rail (MAX) operates in a separate right-of-way or in an exclusive guideway within the street right-of-way, such as in the median or in an exclusive lane. Bus rapid transit, streetcar and frequent bus service have semi-exclusive transit treatments that can range from exclusive lanes and guideways to mixed-traffic operation in combination with transit preferential treatments. Other types of bus and paratransit service operate in mixed traffic. Developing street designs to support transit requires an understanding of the type of transit service that will use the street. The type of transit service will influence the design treatments.

Transit only lanes get buses, trains and streetcars out of regular traffic, prioritize transit mobility and improve reliability and travel times.

Level boarding platforms for bus, streetcar and MAX improves service for passengers and reduces loading and unloading times.

Application

Design classifications	Transit priority treatments: Exclusive transitway	Transit-only lanes	Part-time transit-only lanes	Business access and transit (BAT) lanes	Queue jumps	Transit signal priority	Signal progression	Bus on shoulder	Level boarding	All-door boarding	Transit stop consolidation
Freeway	⊕	○	○	–	–	–	–	⊕	–	–	–
Highway	⊕	○	○	⊖	⊖	○	⊕	⊕	⊕	⊕	⊕
Regional boulevard	○	⊕	⊕	○	⊕	⊕	⊕	–	⊕	⊕	○
Community boulevard	○	○	⊕	○	○	⊕	○	–	⊕	⊕	○
Regional street	○	⊕	⊕	○	⊕	⊕	⊕	–	○	○	○
Community street	○	○	⊕	○	○	⊕	○	–	○	○	○
Industrial street	○	○	○	○	○	○	⊕	○	○	○	⊕

⊕ Preferred treatment ○ Potential treatment ⊖ Not a preferred treatment

Renderings and cross-sections

Visualizing performance-based design

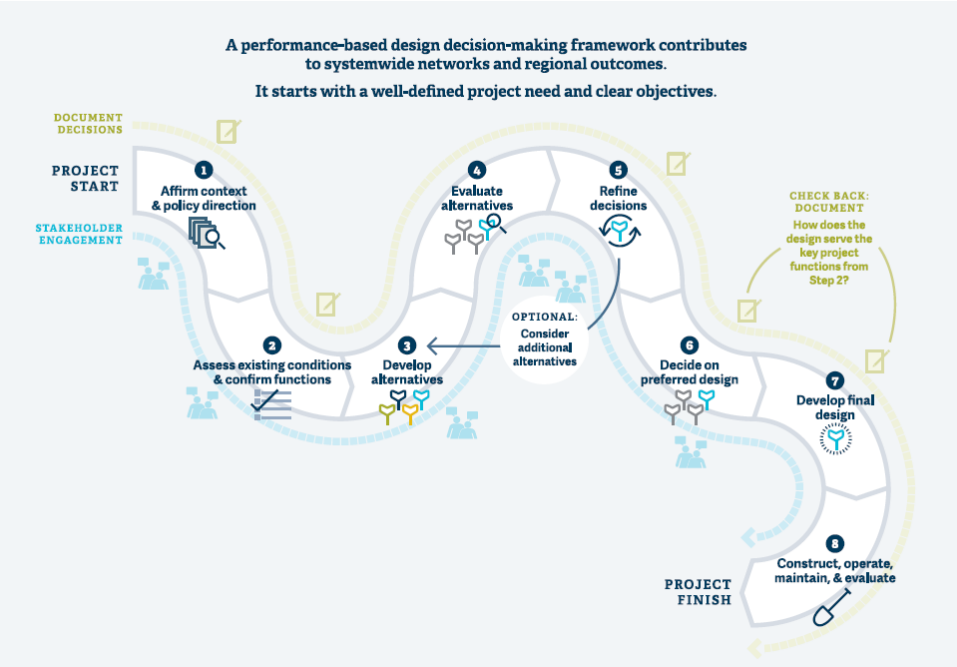
Regional boulevard

Regional boulevard cross-section

Regional boulevard. This rendering illustrates a four-lane arterial in a town center. Buildings are between one and three stories high. An ample frontage zone in front of some buildings provides space for outdoor seating. Sidewalks are buffered from the separated bikeway and traffic. Street trees provide shade, reduce noise and help manage stormwater. A central median manages stormwater with a bioswale. One of the travel lanes has been converted to a transit-only lane. Due to space constraints, transit riders cross the bikeway to board the bus.

Decision-making framework

A process to support performance-based design, achieve desired outcomes and work through trade-offs



Other resources on the webpage

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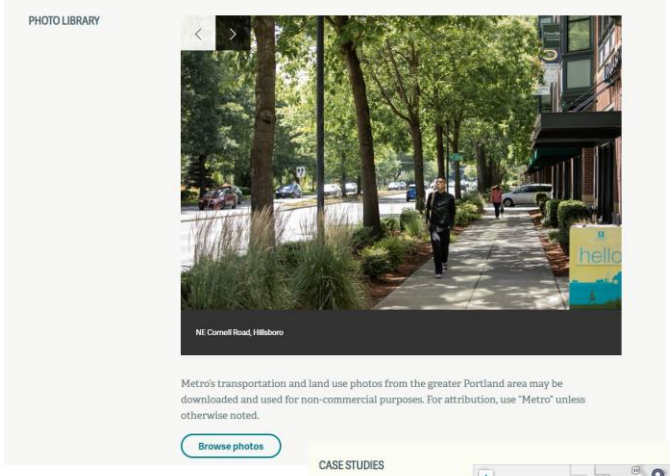

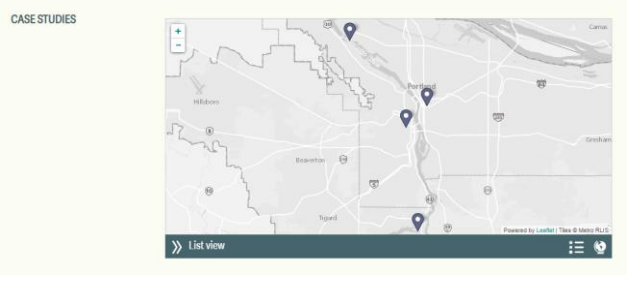

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