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LAND USE PLANNING AND SAFETY

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SUBJECT: 2026 Oregon TSAP – Technical Memorandum #1 Project #25008-000

Task 5

1. INTRODUCTION, PURPOSE, AND SCOPE

This technical memorandum examines the critical relationship between land use planning and transportation safety, highlighting the implications for all road users: pedestrians, cyclists, drivers, and transit users. Specifically, it defines the scope of land use categories examined, including urban, suburban, rural, mixed-use, commercial, residential, and industrial areas, and outlines safety concerns relevant to each.

Oregon, primarily through the work of the Department of Land Conservation and Development (DLCD) and the Department of Transportation (ODOT), has ensured that the state enters the 2026 Transportation Safety Action Plan (TSAP) update with a strong policy foundation. ODOT's Transportation Planning Rule, Climate-Friendly and Equitable Communities (CFEC) rulemaking, parking reforms, Rule 215 standards, and the Oregon Highway Plan are ongoing efforts that already embed safety into land use and transportation planning. The next step is to unify these frameworks by making safety a central policy principle, advanced through model codes and performance standards implemented by ODOT, DLCD, and local governments. This memorandum identifies best practices and proposes recommendations tailored specifically to the Oregon context to best inform the 2026 update to the TSAP.

1.1 BACKGROUND

Oregon faces diverse transportation safety challenges due to varied geographic and developmental contexts, ranging from dense urban environments to sparsely populated rural regions. The effective integration of land use planning into transportation safety strategies is essential for comprehensively addressing these challenges. Historically, land use decisions at the local level significantly influence travel behavior, road usage patterns, and safety outcomes. In the early 20th century, communities were developed as compact, mixed-use neighborhoods that supported walking, cycling, and transit. Streets were designed as shared public spaces. However, with the

rise of automobile ownership in the mid-20th century, suburban development patterns dominated. This is characterized by low-density, single-use zoning, and car-centric street networks.

The transportation safety paradigm of this era focuses on driver behavior, vehicular standards, roadway design, and traffic enforcement, with limited attention to how land use patterns inherently produce risk, e.g., by increasing driving distances, travel speeds, and exposure to high-speed arterials.

1.2 RELEVANCE TO TSAP

Understanding how land use impacts transportation safety directly advances the safety objectives articulated in Oregon's TSAP and provides safety engineers, planners, decision-makers, and other professionals with new opportunities to save lives in Oregon. Integrating insights from this memorandum provides a foundational basis for targeted policy interventions, infrastructure investments, and design strategies tailored to enhance transportation safety for all users statewide.

2. OVERVIEW

2.1 SAFETY OVERVIEW

Transportation safety encompasses preventing crashes and serious injuries involving pedestrians, cyclists, drivers, transit users, and other road users. Essential metrics include crash rates, fatalities, and severe injuries, with performance measures used to track progress and identify high-risk locations. These metrics are crucial in evaluating current conditions, measuring the effectiveness of interventions, and deciding how to prioritize investments. Analysis of crash data has revealed that safety issues vary significantly depending on the land use context, road type, and transportation mode.

Road users encounter a range of safety challenges while traveling. For motor vehicle drivers, these can include road design, speed management, visibility, and intersection configurations, particularly in suburban and rural areas. Pedestrians and cyclists, often categorized as vulnerable road users, are disproportionately represented in severe injury and fatal crash statistics, particularly in urban and suburban settings. Safety concerns for these vulnerable users include inadequate infrastructure, poor roadway design, and high-speed vehicle environments. Transit users, while statistically experiencing fewer direct safety incidents, require safe access to and from transit stops, which is significantly influenced by surrounding land use and infrastructure design.

Driver Safety

Driver safety encompasses roadway design and operational considerations, including appropriate speed limits, adequate roadway lighting, clear intersection visibility, suitable road surface conditions, and consistent roadway signage. Adequate separation between vehicles, clear lane delineation, and efficient traffic management practices contribute significantly to driver safety.

Pedestrian Safety

Pedestrian safety focuses on ensuring safe crossing conditions, sidewalks, and pedestrian-friendly urban designs. Pedestrians are highly vulnerable due to the disparity in mass and speed, compared

to vehicles. Safe pedestrian environments typically include clearly marked crosswalks, pedestrian refuges, adequate street lighting, curb extensions, traffic calming measures, and devices that achieve vehicle separation from other modes of transportation.

Bicycle Safety

Safety for bicyclists involves infrastructure that minimizes conflict points with motor vehicles, such as protected bike lanes, buffered lanes, clear lane markings, and bicycle-specific signals at intersections. Additionally, reducing vehicle speeds and providing adequate visibility are crucial to enhancing bicyclist safety.

Transit Safety

Safety for transit users involves ensuring safe boarding and alighting conditions, pedestrian access to transit stops, and secure waiting areas. Infrastructure design considerations include clearly marked crosswalks, shelters, adequate lighting, and safe transit-stop placements away from high-speed roadways. Since each transit trip also involves two active transportation trips (to and from the transit stop), it is connected to safety for pedestrians, bicyclists, scooter riders, users of mobility aids, and other modes that transit users may employ to gain access to transit.

Safety for Other Road Users

Additional road users such as motorcyclists, scooter riders, and users of mobility aids require specific considerations related to roadway conditions, visibility, and traffic calming measures. These measures are often like those deployed for drivers, pedestrians, and bicyclists.

2.2 MEASURING SAFETY

The Federal Highway Administration (FHWA) has identified safety performance measures that serve as indicators, enabling decision-makers to monitor changes in system conditions and performance against established visions, goals, and objectives.[1] FHWA identifies the following benefits of safety performance measures:

- Greater accountability to policymakers, customers, and other stakeholders.
- Greater linkage between the safety goals/objectives identified through long-range planning and policy formulation.
- A better understanding of the impacts of alternative courses of action aimed at improving transportation system safety.
- Improved communication about transportation safety to customers, political leaders, the public, and other stakeholders.
- Increased organizational focus on safety priorities.
- Information feedback to promote ongoing improvement of business processes as they relate to supporting safety strategies.

[1] "What are Safety Performance Measures?," Federal Highway Administration. https://highways.dot.gov/safety/hsip/spm/primer-safety-performance-measures-transportation-planning-process/what-are-safety

FHWA breaks safety performance measures into three categories:

Core Measures relate to the safety goals and objectives established as part of policy or as part of a planning process. These measures allocate resources and measure overall progress. They may include crashes, injuries, and fatalities and can be presented as numbers, rates, percentages, or ratios.

Behavioral Measures provide a link between specific safety activities and outcomes by assessing whether the activities influence behavior. These may include direct observations of safety belt use and vehicle speed or self-reported behavior pertaining to program awareness and attitude obtained through surveys.

Activity Measures document safety program implementation and track actions taken by law enforcement, courts, media, education, and others to reduce crashes, injuries, and fatalities.

At the national level, the data that informs these safety performance measures is collected through the Fatality Analysis Reporting System (FARS), a nationwide census that provides public yearly data regarding fatal injuries suffered in motor vehicle traffic crashes.

3. RELATIONSHIP BETWEEN LAND USE AND SAFETY

3.1 URBAN CONTEXTS

ODOT has developed a set of six urban land use contexts to describe the variety of urban areas and unincorporated communities in Oregon.[2] These Urban Contexts were originally established in the Blueprint for Urban Design (BUD), which has now been incorporated within the ODOT Highway Design Manual (HDM) to support a context-sensitive approach to roadway planning and design in urban environments.

ODOT's six Urban Contexts are adapted from the National Cooperative Highway Research Program (NCHRP) Report 855, with modifications tailored to Oregon's specific characteristics. They are described in Table 2.

TABLE 2: URBAN CONTEXT MATRIX

LAND USE CONTEXT	BUILDING SETBACKS	BUILDING ORIENTATION	LAND USE	BUILDING COVERAGE	PARKING	BLOCK SIZE
TRADITIONAL DOWNTOWN/CBD	Shallow/None	Yes	Mixed (Residential, Commercial, Park/Recreation)	High	On-street/ garage/ shared in back	Small, consistent block structure
URBAN MIX	Shallow	Some	Commercial fronting, residential behind or above	Medium	Mostly off-street/Single row	Small to medium blocks

[2] ODOT Roadway Engineering Section, Highway Design Manual. https://www.oregon.gov/odot/Engineering/Documents_RoadwayEng/HDM-0000-Full.pdf

LAND USE CONTEXT	BUILDING SETBACKS	BUILDING ORIENTATION	LAND USE	BUILDING COVERAGE	PARKING	BLOCK SIZE
					in front/ In back/ On side	
COMMERCIAL CORRIDOR	Medium to Large	Sparse	Commercial, Institutional, Industrial	Low	Off-street/In front	Large blocks, not well defined
RESIDENTIAL CORRIDOR	Shallow	Some	Residential	Medium	Varies	Small to medium blocks
SUBURBAN FRINGE	Varies	Varies	Varied, interspersed development	Low	Varies	Large blocks, not well defined
RURAL COMMUNITY	Shallow/None	Some	Mixed (Residential, Commercial, Institutional, Park/Recreation)	Medium	Single row in front/In back/On Side	Small to medium blocks

These contexts are intended to reflect the diversity of urban areas and unincorporated communities throughout Oregon. In this document, the term "urban" is used in a broad sense—it does not exclusively refer to areas within an Urban Growth Boundary (UGB) or to locations that meet the federal definition of "urban" as having a population density of 5,000 or more.

Within the Rural Community context, unincorporated towns and cities are considered urban for this framework. However, to qualify as a Rural Community, there must be a recognizable element of a traditional town or city. A mere cluster of homes or buildings near a highway does not meet this definition. Instead, the presence of a community hub, such as a post office or store, alongside residential development, is necessary to satisfy the intent of this context.

Urban Contexts and Safety by Road User Mode

The interaction of the above-identified Urban Contexts with transportation modes reveals distinct safety patterns. Land use significantly affects transportation safety by influencing travel patterns, traffic speeds, roadway design requirements, and interactions between different modes of transportation.

- **Traditional Downtown/CBD**: Typically characterized by high population density, mixed land uses, and intensive pedestrian and bicycle activity, traditional downtowns/central business districts require robust multimodal transportation infrastructure. The safety concerns in these urban contexts primarily revolve around pedestrian and bicycle interactions with motor vehicles, particularly at intersections and mid-block crossings. Roadway design, traffic calming measures, and clearly delineated multimodal facilities, such as protected bike lanes and pedestrian refuges, significantly reduce safety risks. Vehicle speeds are typically 25 mph or below.
- **Urban Mix**: Like traditional downtowns/central business districts, building setbacks in Urban Mix contexts are generally shallow with a mix of buildings with tight frontages to the

sidewalk and pedestrian pathways. Parking is primarily off-street, with single-row parking available in front of, behind, or on the sides of the buildings. Safety concerns in these urban contexts focus largely on pedestrian and bicycle interactions with motor vehicles, particularly at intersections and mid-block crossings. Speeds are typically 25 to 30 mph.

- **Commercial Corridor**: Commercial Corridors consist primarily of large commercial, retail, or industrial properties along major higher-speed arterials. Access to properties along Commercial Corridors is usually focused on motorized vehicles and transit. Connectivity is lower along these corridors due to the presence of larger tracts of land, medium to large building setbacks, smaller building coverages, and the absence of a connected grid. Properly designed access management, clearly delineated turning lanes, and controlled driveway access can mitigate the safety risks for bicyclists and pedestrians. Speeds are typically 30 to 35 mph.
- **Residential Corridor**: Residential Corridors are characterized by higher-density residential development. There is high potential for pedestrian, bicycle, and transit uses that will require appropriate facilities to provide safe and comfortable access. The single-occupancy vehicle trip dominates this use, however. Speeds are typically 30 to 35 mph.
- **Suburban Fringe**: The Suburban Fringe context is generally the transition area from higher speed rural roadways into lower speed urban areas. Building setbacks and block sizes are generally large, discouraging the use of bicycles and pedestrians. Speeds range from 35 to 40 mph.
- **Rural Community**: The Rural Community context comprises small, unincorporated communities with the highway serving as the main street. Speeds reduce quickly as drivers transition from undeveloped rural areas to communities where residents may be walking and crossing the street to access schools, shops, or other destinations. Balancing the needs of the community and the through traffic is critical. Speeds range from 25 to 35 mph.

3.2 INFLUENCE OF LAND USE DECISIONS ON SAFETY

Land use decisions shape transportation safety by influencing traffic behavior, roadway design, and interactions among various road users.

The World Road Association[3] highlights four key land-use principles that significantly impact safety outcomes:

- Development density
- Land use mix
- Street connectivity
- Urban design

Thoughtful integration of these critical land use and land development principles significantly improves safety outcomes for all road users. By strategically applying these principles, especially at

[3] Land Use and Safety: An Introduction to Understanding How Land Use Decisions Impact Safety of the Transportation System. World Road Association, Technical Committee 3.1, National Road Safety Policies and Programs.

the local level, Oregon can effectively mitigate traffic hazards, reduce crash rates and severities, and foster safer, more accessible, and sustainable communities.

Development Density

Development density directly influences travel behavior and associated safety risks. As density increases, the frequency of crashes typically rises due to higher volumes of pedestrians, cyclists, and vehicles sharing limited roadway space. However, increased density often reduces vehicle speeds, significantly diminishing crash severity and fatalities. High density developments also create shorter trips, encourage active transportation modes, and lead to a more predictable traffic environment, thus reducing the risk of high-severity crashes.

Dense urban areas generally feature lower per capita vehicle travel due to closer proximity between origins and destinations, which inherently lowers exposure to traffic-related risks. Strategic densification in urban cores, supported by appropriate infrastructure, has been proven to decrease overall crash severity by reducing vehicle speeds, a factor critically associated with reduced fatalities and serious injuries.

Land Use Mix

Mixed use developments integrate residential, commercial, institutional, and recreational spaces in close proximity, promoting multimodal transportation and minimizing the necessity for extensive vehicle use. This arrangement significantly reduces total travel distances and encourages non-motorized transportation, inherently lowering crash exposure. Residents in mixed use environments typically demonstrate decreased reliance on automobiles, higher usage of walking and cycling modes, and reduced peak-hour traffic congestion.

Research underscores that mixed use developments typically experience 5%-15% fewer vehicle trips compared to single use zones. Such developments facilitate pedestrian-friendly environments, improve transit viability, and reduce VMT, thus contributing substantially to reduced crash frequencies and severities.

Street Connectivity

Street connectivity, defined by the ease and directness of routes available for travel, greatly affects safety outcomes. High connectivity creates multiple pathways, dispersing traffic efficiently and reducing congestion points, particularly on arterial roads. Enhanced street connectivity typically yields lower vehicle speeds due to the frequency of intersections, thereby reducing the severity of potential crashes.

However, increased intersections require careful design to manage conflict points effectively. Proper design measures include implementing traffic calming strategies, clearly marked pedestrian crossings, daylighting intersections, and bicycle lanes. Enhanced connectivity also contributes positively to emergency response times, improving outcomes following crashes. Overall, well-designed connectivity reduces high-speed collisions and ensures smoother integration among different transportation modes.

Urban Design

Urban design encompasses the overall planning and construction of physical spaces, emphasizing safety, functionality, and accessibility. Effective urban design considers human scale and prioritizes pedestrian and cyclist safety through thoughtful infrastructure, such as wider sidewalks, protected bike lanes, pedestrian refuge islands, and clearly marked crosswalks. The World Road Association emphasizes that good urban design inherently supports safer traffic environments by clearly defining spaces for different road users, reducing conflicts, and promoting predictable behavior.

Complete streets concepts, designed to safely accommodate all users regardless of their transportation mode, have shown significant reductions in crash rates and severity. Traffic calming tools such as curb extensions, raised crossings, median islands, and narrower travel lanes, are integral components that effectively moderate vehicle speeds and enhance pedestrian safety.

Moreover, urban design directly influences driver behavior by clearly defining roadway functions, promoting visual clarity, reducing cognitive overload, and improving overall road user comprehension. Integrating comprehensive urban design standards into land use planning effectively mitigates traffic-related risks, promotes sustainable transport choices, and enhances community safety.

Policies that manage and reduce parking supply can positively influence transportation safety by reshaping urban environments to prioritize people over cars. Communities that do not provide excessive parking often see reduced vehicle volumes and lower traffic speeds, decreasing the likelihood and severity of crashes. Parking management also encourages more compact, mixed-use development that supports walking, cycling, and transit, creating safer conditions for vulnerable road users. Additionally, reducing parking supply can lower the number of cars circulating in search of spaces, a behavior linked to congestion and collision risk.

In Oregon's dense urban areas, particularly Portland, Transportation Network Companies (TNCs) like Uber and Lyft have increased curbside activity, reducing parking demand but creating pressure on curb management and prompting new fees. Evidence on safety impacts is mixed; while TNCs provide alternatives to impaired driving, local data show no clear reduction in crashes or fatalities, which remain high. Studies and city reports suggest many TNC trips substitute for short inner-city trips that could otherwise be made by walking, biking, or transit, with limited evidence of significant long-term shifts in overall mode share.[4][5]

Table 3 outlines various land use factors that inform the principles described above. These factors can affect travel behavior and population health.

[4] National Institute for Transportation and Communities. (2020). *The impact of ride-hailing services on parking revenue and transportation systems*. University of Oregon. https://nitc.trec.pdx.edu/research/project/1241

[5] Portland Bureau of Transportation. (2019). *New mobility snapshot: A look at emerging transportation technologies in Portland*. City of Portland. https://www.portland.gov/transportation/newmobility

TABLE 3: LAND USE FACTORS[6]

FACTOR	DEFINITION	TRAVEL IMPACTS
REGIONAL ACCESSIBILITY	Location of development relative to regional urban center.	Reduces per capita vehicle mileage. More central area residents typically drive 10%-40% less than at the urban fringe.
DENSITY	People or jobs per unit of land area.	Reduces vehicle ownership and travel and increases travel choices. A 10% increase typically reduces VMT by 0.5%-1% as an isolated factor, and 1%-4% including associated factors (regional accessibility, mix, etc.).
MIX	Proximity between different land uses.	Tends to reduce vehicle travel and increase use of alternative modes, particularly walking. Mixed use areas typically have 5%-15% less vehicle travel.
CENTEREDNESS	Portion of jobs and other activities in central activity centers.	Increases use of alternative modes. Typically, 30%-60% of commuters to major commercial centers use alternative modes compared with 5%-15% at dispersed locations.
NETWORK CONNECTIVITY	Degree that walkways and roads are connected	Increased roadway connectivity can reduce vehicle travel and improved walkway connectivity increases non-motorized travel
ROADWAY DESIGN	Scale, design, and management of streets	Multimodal streets increase the use of alternative modes. Traffic calming reduces VMT and increases non-motorized travel.
ACTIVE TRANSPORT CONDITIONS	Quantity, quality, and security of sidewalks, crosswalks, paths, and bike lanes	Improved walking and cycling conditions tend to increase nonmotorized travel and reduce automobile travel. Residents of more walkable communities typically walk 2-4 times more and drive 5%-15% less than in more automobile-dependent areas.
TRANSIT QUALITY AND ACCESSIBILITY	Quality of transit service and access from transit to destinations	Increases ridership and reduces automobile trips. Residents of transit-oriented neighborhoods tend to own 10%-30% fewer vehicles, drive 10%-30% fewer miles, and use alternative modes 2-10 times more than in automobile-oriented areas.

[6] Littman, T. and Steele, R., Land Use Impacts on Transport: How Land Use Factors Affect Travel Behavior, Victoria Transport Policy Institute, 2015.

FACTOR	DEFINITION	TRAVEL IMPACTS
PARKING SUPPLY AND MANAGEMENT	Number of parking spaces per building unit or acre, and how parking is managed and priced	Tends to reduce vehicle ownership and use and increase use of alternative modes. Cost-recovery pricing (users finance parking facilities) typically reduces automobile trips by 10%-30%.
SITE DESIGN	Whether oriented towards auto or multimodal accessibility	More multimodal site design can reduce automobile trips, particularly if implemented with improvements to other modes
MOBILITY MANAGEMENT	Strategies that encourage more efficient travel activity	Tends to reduce vehicle ownership and use and increase use of alternative modes. Impacts vary depending on specific factors.

4. BEST PRACTICES

4.1 ONGOING OREGON EFFORTS

ODOT has been advancing, and continues to advance, several initiatives that link safety and land use planning:

- Transportation Planning Rule (TPR): requires that safety be explicitly considered in Transportation System Plans (TSPs), both as a prioritization criterion and through mandatory safety analyses in long-range planning.
- Climate-Friendly and Equitable Communities (CFEC): expands performance measures beyond traditional volume-to-capacity (v/c) ratios, encouraging safety and GHG-reduction. CFEC also promotes compact development and densification, which can indirectly improve safety by reducing trip distances and vehicle speeds. CFEC only applies within areas under Metropolitan Planning Organization (MPO) jurisdiction
- Parking Reform: ODOT and other agencies in Oregon have undertaken reforms to reduce or eliminate minimum parking requirements. While the direct safety implications are still emerging, reduced parking supply can encourage multimodal travel and support safer, less car-centric development patterns.
- Division 215 rule (OAR 731-015): establishes performance standards for highway approaches and access management, directly influencing safety outcomes in development review.
- Analysis Procedures Manual (APM) toolbox[7]: ODOT's latest APM guidance includes safety performance standards to support context-sensitive roadway planning. OAR 660-012-

[7] Tech Memo #10: Performance Measure and Performance Standard Application Guidance; TPR Modeling and Analysis Guides Update. https://www.oregon.gov/odot/Planning/Documents/TM10_Performance_Measure_Standards_Application_Guidance.pdf

0215(3) requires cities and counties within metropolitan areas and Metro to adopt at least two transportation performance standards (comprised of a performance measure and associated threshold). At least one of the transportation performance standards must support increasing transportation options and avoiding principal reliance on the automobile. Additionally, the performance standards must evaluate at least two of the following objectives for the transportation system, for any or all modes of transportation:
    - Reducing climate pollution – creating feasible transportation options that reduce carbon emissions
    - Equity – consideration for existing or proposed transportation-related disparities and barriers experienced by historically marginalized communities
    - Safety – providing a transportation system that reduces injuries and fatalities, and one that people feel comfortable using
    - Network connectivity – modal networks that provide route options to users and minimize out-of-direction travel
    - Accessibility – the ease of reaching (and interacting with) destinations or activities distributed in space
- Oregon Highway Plan (OHP) actions 1f.5 and 1f.6: these actions call for integrating safety into land use planning and project prioritization, reinforcing the connection between safety performance and planning frameworks.
- Transportation and Growth Management (TGM) Program: this program recognizes that land use decisions affect transportation options and transportation decisions influence land use patterns. The program is a partnership of the Oregon Department of Land Conservation and Development and ODOT. Since 1993, TGM has provided funds and services to over 270 cities, counties, Tribes, and transit districts, promoting smart growth principles that enable communities to meet transportation needs while retaining livability.

Statewide Land Use Planning Goal 14: Urbanization

Oregon's comprehensive land use planning framework is most recognized for its use of the Urban Growth Boundary (UGB), which is established in each city's comprehensive plan to manage and contain urban development. The UGB is intended to provide a 20-year supply of land to accommodate housing, employment, industry, recreation, and open space needs. Land within a UGB is considered urbanizable and is prioritized for more intensive development. Cities with populations over 2,500 are required to adopt transportation and utility system plans within their UGBs. Additionally, comprehensive plans must promote efficient land use and support the creation of livable, walkable, and higher-density communities while also ensuring smooth transitions between urban and rural areas. By encouraging compact development patterns and multimodal infrastructure planning, the law helps reduce vehicle miles traveled and fosters safer conditions for all road users, including pedestrians and cyclists.

Portland Vision Zero[8]

As part of its Vision Zero campaign, Portland established a High Crash Network comprised of corridors with disproportionately high crash impacts. Much of this network coincides with automobile-oriented land uses such as strip malls in Commercial Corridor Urban Contexts. These streets represent 8% of Portland's streets but account for 62% of traffic deaths from 2018 to 2022. The city has prioritized these areas for street redesign and land use interventions.

Salem Area Comprehensive Plan[9]

Through its Comprehensive Plan, the City of Salem is actively aligning land use planning with its goals for safer and more sustainable transportation. By conducting focused planning studies in specific areas of the city, Salem advances multiple priorities: creating walkable corridors, revitalizing mixed-use neighborhoods, and expanding housing options. These efforts help reduce reliance on personal vehicles by encouraging compact, connected development patterns that make walking, biking, and transit more viable and attractive.

Eugene – River Road-Santa Clara Neighborhood Plan[10]

The River Road-Santa Clara Neighborhood Plan emphasizes integrating land use changes with safer transportation options. It encourages mixed-use nodes along corridors with high crash rates, reducing the need for long-distance car trips. Eugene also proposes a development strategy oriented towards Bus Rapid Transit (BRT), aligning dense housing and commercial uses with transit corridors.

4.2 EXAMPLES OUTSIDE OF OREGON

Rosslyn-Ballston Corridor, Arlington, Virginia[11]

The City of Arlington concentrated dense, mixed-use development along a Metrorail corridor while preserving lower-density neighborhoods beyond. This so-called "Bullseye" model of land use encourages walking, bicycling, and transit use. Despite a growing population, the area has maintained low rates of pedestrian and bicyclist injuries due to well-designed crossings, reduced speed limits, and robust public engagement.

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[8] Vision Zero: Eliminating traffic deaths and serious injuries, Portland.gov. https://www.portland.gov/transportation/vision-zero

[9] Salem Area Comprehensive Plan, City of Salem. https://www.cityofsalem.net/business/land-use-zoning/reports-and-commissions/salem-area-comprehensive-plan

[10] River Road-Santa Clara Neighborhood Plan, City of Eugene. https://www.eugene-or.gov/DocumentCenter/View/65546/RRSC-Action-Plan-Draft?bidId=

[11] Rosslyn-Ballston Corridor, Smart Growth. City of Arlington, Virginia. https://www.arlingtonva.us/Government/Projects/Planning/Smart-Growth/Rosslyn-Ballston-Corridor

New York City Vision Zero[12]

New York City established a Pedestrian Plaza Program that converted underused road space in dense commercial areas into pedestrian zones. This effort resulted in a reduction in pedestrian injuries in these areas. In addition, New York City incorporated integrated land use data into its crash analysis to prioritize safety upgrades in areas with schools, senior housing, and dense retail. This highlighted the importance of pedestrian safety measures in high-traffic areas.

Washington State Target Zero Plan[13]

Washington's Target Zero Plan acknowledges the significant role that land use plays in shaping transportation safety outcomes. The plan emphasizes the need for coordinated transportation and land use planning to reduce exposure to high-risk travel conditions. It encourages compact, mixed-use development patterns that support safe walking, biking, and transit access, reducing dependency on high-speed vehicular travel. The strategy also advocates context-sensitive roadway designs that reflect the surrounding land use, improving safety for all users. Local jurisdictions are urged to integrate safety considerations into comprehensive plans and zoning decisions. Ultimately, the plan aims to align urban form and infrastructure design to reduce serious injuries and fatalities systematically.

Canada's National Road Safety Strategy 2025[14]

Canada's National Road Safety Strategy emphasizes a Safe System approach to reduce serious injuries and fatalities through coordinated land use and transportation planning, integration of multimodal safety measures, and collaboration across all levels of government. This strategy demonstrates how land use policies paired with safety performance monitoring can effectively reduce crash risk and support sustainable travel modes.

5. POLICY IMPLICATIONS AND RECOMMENDATIONS TO INCLUDE IN TSAP

Transportation safety is inextricably linked to how we use and shape land. The spatial arrangement of communities, zoning laws, street networks, and development standards all influence traveler behavior and crash risk. To effectively reduce fatalities and serious injuries for all road users, land use planning must align with Vision Zero and Safe System principles. Zoning reform, street design standards, and connectivity requirements can be leveraged through land use planning to advance safety outcomes.

Note: The recommendations below are listed without a comprehensive discussion of implementation barriers and how to overcome them. Full implementation will require Safety being elevated in these policies and programs such as the TGM, CMU, connectivity, access management,

[12] Vision Zero: Building a Safer City, City of New York. https://www.nyc.gov/content/visionzero/pages/

[13] Target Zero, Washington Strategic Highway Safety Plan, State of Washington. https://targetzero.com/

[14] "Vision Zero and the Safe System Approach: A Primer for Canada," Transportation Association of Canada, https://www.tac-atc.ca/wp-content/uploads/prm-vzss-e.pdf

elimination of parking minimums, and transit-oriented design. These policy tools will be required to meet safety goals.

5.1 ZONING REFORM FOR SAFER MOBILITY

Some zoning promotes low-density, single-use development patterns that encourage automobile dependency, longer trips, and higher speeds. This can increase crash exposure and the risk of severe injury outcomes in the event of a crash. Strategies to reform zoning to support safety are listed below.

Compact Mixed-Use Development

Encouraging higher residential and employment densities through upzoning and form-based codes reduces trip distances and fosters walking, biking, and transit. More "eyes on the street" also improves personal safety and community cohesion. Commercial and residential development also requires delivery services, sometimes in the form of large trucks; this must be considered alongside the other items.

Reduction or Elimination of Parking Minimums

Excess parking subsidizes driving and separates buildings from sidewalks, diminishing pedestrian visibility and safety. Reforming these standards can encourage active modes and reduce VMT.

Promotion of Affordable Infill Development and Transit Oriented Development (TOD)

Placing affordable housing near jobs, schools, and transit options minimizes car dependency for vulnerable populations who are disproportionately impacted in crashes.

5.2 STREET DESIGN STANDARDS: ALIGNED WITH URBAN CONTEXT

Connecting land use planning with street design helps prioritize the safety of the modes being encouraged by the zoning reform outlined above: walking, biking, and transit use. Street design recommendations are outlined below.

Adopt Context Sensitive Design

Applying design guidance based on adjacent Urban Context ensures streets match the expected users. For example, narrower lane widths and traffic calming features are appropriate in a Traditional Downtown/CBD Urban Mix.

Design for Vulnerable Road Users

As density increases, so does the number of people walking and biking. This calls for complete street elements, such as protected bike lanes, raised crosswalks, adequate lighting, and accessible curb ramps.

Design Speed, Not Posted Speed

High speed street designs near schools, parks, and transit stops increase the risk of serious and fatal crashes. Streets should be designed to operate safely at context-appropriate speeds, reinforcing speed limits through physical measures.

5.3 CONNECTIVITY AND ACCESS MANAGEMENT

Improved connectivity disperses traffic, shortens emergency response times, and provides alternatives for all users. Land use codes can reduce crash risk through the strategies below.

Encourage Fine-Grained Street Grids

"Superblocks," cul-de-sacs, and the like hinder walkability and concentrate traffic on arterial roads. Connectivity requirements can mandate maximum block lengths and implement multi-modal cut-throughs for those walking and biking.

Enhance Multimodal Access

Mandate direct, safe, and accessible pedestrian and bicycle access in all developments, especially to transit stops, schools, and activity centers.

Automobile Access Control

Minimizing driveways on arterial corridors can reduce turning-related crashes and preserve pedestrian space. Access management policies can be embedded in zoning and development review processes to reduce fatal and serious injury crash risks.

5.4 ADDITIONAL STRATEGIES

These additional strategies can be implemented through land use processes to improve transportation safety.

Development Review for Safety Impacts

Safety impact assessments can be required during land use approvals, like site plan and development reviews, conditional use permits, and traffic impact studies. These reviews should evaluate how a project supports or hinders Vision Zero goals.

Data-Driven Prioritization

Use crash and equity data to inform rezoning, site design, infrastructure investments, and policy updates, ensuring safety benefits accrue for high-risk and underserved communities.

Joint Planning Between Transportation and Land Use Agencies

Aligning comprehensive plans, safety action plans, and capital improvement programs can create consistent goals, performance metrics, and implementation timelines.

Land use planning can be a powerful tool for achieving transportation safety goals. Through reforms, zoning, street design, and connectivity, environments can be created that inherently reduce crash risks and support safe, multimodal transportation systems. Embedding safety into the

fabric of land use policy ensures that the built environment works with, not against, the goal of eliminating serious injuries and deaths on our roadways.

5.5 STRATEGIES FOR IMPLEMENTING SAFER LAND USE

ODOT recommends additional approaches to ensure safety is systematically embedded in land use policy and practice. These items should be added to the 2026 TSAP as actions connected to Safer Land Use Planning:

- Model Code (DLCD): The DLCD Model Code is widely adopted by local jurisdictions. Introducing safety-focused amendments, such as connectivity requirements, reduced block lengths, and multimodal site design standards, would allow safety considerations to naturally propagate statewide through local adoption.
- Align TSP and TSAP Requirements: Update Transportation System Plan (TSP) safety analysis requirements to align more closely with local Transportation Safety Action Plan (TSAP) frameworks. This ensures consistency in metrics, performance standards, and safety objectives across the state.
- Work with DLCD to develop a Safe Systems Code Audit and Implementation Checklist to help inform and educate local jurisdictions about integrating safety design elements and standards in development codes.

6. CONCLUSION AND NEXT STEPS

As Oregon looks ahead to the 2026 TSAP update, it is important to recognize that a strong foundation already exists through ODOT's Transportation Planning Rule, CFEC rulemaking, parking reforms, Rule 215 standards, and the Oregon Highway Plan. These efforts have begun the work of embedding safety in land use and transportation planning. The next step is to build on these frameworks, making safety the unifying principle across all policies. Collaboration between ODOT, DLCD, and local governments can scale safety through widely adopted tools such as model codes and performance standards. By doing so, Oregon can more effectively integrate safety into the fabric of community development, ensuring that safety outcomes benefit all people—whether walking, biking, driving, or riding transit.

This memorandum has examined how land use types—from urban cores to rural expanses, and from mixed-use centers to industrial zones—present safety challenges and opportunities for all road users. As Oregon looks ahead to the 2026 TSAP update, it will be necessary to shift the transportation paradigm from automobile-centric development of both land and the transportation system. Safety cannot be fully achieved through individual behavioral interventions and infrastructure projects alone; it must be informed by land use decisions that prioritize safety.

By applying land use best practices appropriately to Oregon's unique conditions, safety professionals, and transportation partners (including planners, engineers, advocates, and policymakers) can use the TSAP to make more informed decisions that reduce crash risks and support more resilient, livable, and connected communities across the state.