VISION 2050

Freight

Briefing Paper

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Puget Sound Regional Council

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Introduction

Freight transportation is critical to the region's economy and quality of life. Individuals and businesses in the central Puget Sound region depend on the timely delivery of goods for access to daily essentials. Almost every product used today is brought to consumers via the freight system, which provides for a seamless connection between users and goods. An effective freight system is critical to ensuring customer satisfaction, individual and business success, and supporting the regional economy.

The reliable movement of goods depends on the effective integration of freight into the land use and transportation planning process. Developed as part of the VISION 2050 update, this briefing paper highlights key freight considerations relevant to ongoing policy discussions on growth. The goal is to provide context to decision makers on the freight transportation system in the region and its importance, and to elaborate on the potential impacts of growth and land use decisions on freight movement and vice versa.

Background & Context

Freight transportation refers to the movement of goods from one location to another. The average person might recognize freight by visible features such as ships, trucks, rail and ports. However, for most people, the importance, integration and essential role of freight in their daily lives is less recognized and understood. From our morning coffee, the clothes we wear, the groceries we buy, the supplies we use at work, to the merchandise that we order online – all of these were brought to us through the freight system.[1]

The freight system moves and delivers goods via a complex multimodal system of roadways, railways, airports, marine ports, rivers and pipelines.[2] WSDOT's 2017 Freight System Plan[3] categorizes the freight system in the state into three integral components:

- Global Gateways that provide freight access to international markets
- Made in Washington, referring to goods manufactured or produced in Washington

[1] Regional Plan Association (2016, July). Why Goods Movement Matters- Strategies for Moving Goods in Metropolitan Areas. Retrieved from http://goodsmovementmatters.org/

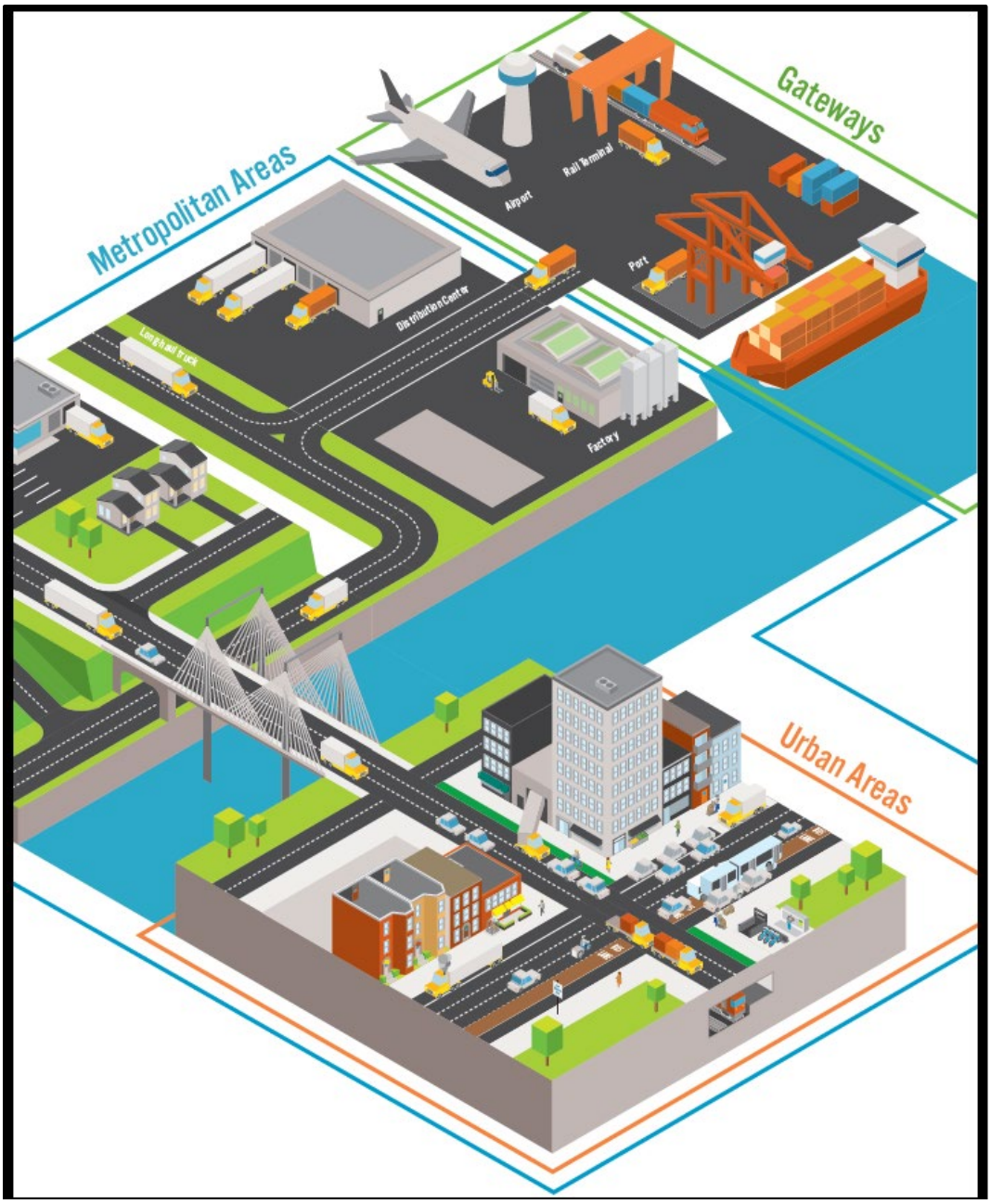
[2] National Cooperative Freight Research Program (2011). Impacts of Public Policy on the Freight Transportation System. NCFRP Report 6. Transportation Research Board.

[3] WSDOT (2017). 2017 Washington State Freight System Plan. Retrieved from https://www.wsdot.wa.gov/Freight/systemplan.htm

- Delivering Goods to You, referring to local freight delivery for business and residents

Each of these components differ in terms of economic impacts, geographical impacts, direct and indirect jobs created, primary modes used to move freight, and influences on various supporting industries.

In addition to encompassing all modes of transportation, the freight system relies on supporting infrastructure such as intermodal terminals, warehouses, and processing facilities to move goods from one location to another. Goods that come into the central Puget Sound region typically arrive at major gateways such as ports, airports, and rail terminals. From these gateways, the goods are transported to warehouses and distribution centers for processing and routing to final destinations, either within or outside of the region. Similarly, goods that are produced within the region are transported to destinations outside the region.[1] See Figure 1 below for an illustration of this system. The freight transportation system allows for this complex and seamless movement of goods.



Source: Regional Plan Association

Why does the freight system matter?

Freight movement is vital to residents, businesses and industries throughout the region. Just as the region's residents travel for work or recreation, goods consumed by residents and businesses must also travel to their destinations. The reliable, timely, and efficient delivery of goods is critical to customer satisfaction, business success and economic growth. In recent years, the timely delivery of goods has become even more critical, due to a combination of steep growth in e-commerce, increasing consumer

expectations for faster deliveries, and a shift in business preferences for "just-in-time" logistics.

The goods moved via the freight transportation system typically travel long distances and are the result of a complex supply chain system designed to connect producers, distributors, and retailers to the final consumer. For example, consider a commonly used item, such as a highlighter. Figure 2 traces the process used to deliver this product to its destination. This complex supply chain process starts with materials sourced in France, is combined with other components and manufactured in the United States, then ends with a completed product on store shelves in local cities. The underlying freight system effectively connects people and goods, locally and globally.

FIGURE 2: Journey of a Highlighter

Source: Coalition for America's Gateways & Trade Corridors

In the central Puget Sound region, the freight system not only plays a role in everyday lives but is also a significant driver of the region's economy.[4,5] The Seattle-Tacoma-Bellevue metropolitan area was among the top five goods exporters in the country in

[4] WSDOT (2014). Washington State Freight Mobility Plan. Retrieved from https://www.wsdot.wa.gov/NR/rdonlyres/4AB1DCDE-5C29-4F08-B5E7-697F432C34D7/0/2014WashingtonStateFreightMobilityPlan.pdf

[5] Seattle Department of Transportation (2016, September). City of Seattle Freight Master Plan. Retrieved from https://www.seattle.gov/transportation/document-library/citywide-plans/modal-plans/freight-master-plan

2017.[6] Freight and trade play a significant role across the state as well, and Washington is the second most trade-dependent state on a per capita basis.[3] Maintaining the strategic advantages provided by the regional freight system and ensuring the efficient and reliable movement of goods are critical to the region's economic future and quality of life.

Freight Considerations & Public Policy

One of the common challenges facing freight systems across the country, including the central Puget Sound region, is an inadequate understanding of how freight fits into the public policy and decision-making framework.[2] For example, growth in population and employment will also result in growth in demand for freight and goods. Accommodating the growth in both people and goods movement can create challenges and intensify the competition for scarce curb and sidewalk space in these areas.

Locational decisions on siting new developments can exacerbate existing bottlenecks, potentially impeding both goods and people movement. This example highlights the importance of incorporating freight into the decision-making process.

VISION 2050

The Puget Sound Regional Council is currently extending the region's growth plan to 2050. VISION 2050 builds on the region's existing plan (VISION 2040) and is a long-term strategy for sustaining a healthy environment, thriving communities, and a strong economy. It also includes the Regional Growth Strategy, which provides guidance for planning for population, housing, and employment growth in countywide targets and local comprehensive plans. VISION 2050 is anticipated to be adopted by PSRC's General Assembly in 2020.

The goal of this briefing paper is to identify key intersections between freight and land use decisions for local agencies to consider as part of planning for growth. In developing VISON 2050, the region's decision makers will consider strategies to meet the anticipated growth in population and employment. Complementing the regional vision, local jurisdictions will make policy decisions on land use and development patterns and how to plan for the anticipated growth.

Within this context, key considerations include:

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[6] U.S. Department of Commerce. Office of Trade and Economic Analysis (OTEA). International Trade Administration (2017). Exports by Metropolitan Area. Retrieved from http://tse.export.gov/metro/SelectReports.aspx?DATA=Metro

- What should the region's decision makers understand about freight and its core issues as they pertain to future land use decisions?
- What are the potential impacts of planning and development decisions on freight movement and vice versa?

The VISION 2050 planning process provides a valuable opportunity to elaborate on the role of freight and clarify the importance of incorporating freight considerations into policy decisions. The intent is not to identify solutions but rather to raise awareness and ensure that decisions regarding future growth support and enhance freight mobility in the region. The freight considerations identified in this paper are focused primarily around land use and development decisions and are not meant to be exhaustive. There are broader freight related issues that will be considered and incorporated into PSRC's ongoing work program for regional freight planning, as applicable.

The next section covers the components of the freight system and identifies recent trends in freight movement. This is followed by a description of freight issues relevant to planning conversations.

Recent Trends in Freight Movement

Notable shifts in recent years have resulted in increasing goods movement and changing distribution patterns in the region, some of which are highlighted below.

The central Puget Sound region has seen a surge in activity. Between 2010 and 2017, over 376,000 people have moved into the region and over 343,000 jobs have been added. International trade in the region has grown steadily as well. Since 2010, exports of products from the region, including aerospace parts, agricultural products (including apples, cherries, and soybeans), fresh seafood, high-tech manufacturing goods, and other commodities, have increased by 66%.[6] Regional growth, combined with an increase in international trade, has increased the overall demand for goods and services to support the residents, industries and businesses in the region. This trend is expected to continue in the future.

Another notable shift is the steep rise in e-commerce. Since 2010, U.S. online sales have been averaging 15% year-over-year growth, and online sales made up 9% of total U.S. retail sales in 2017.[7] In order to support growing e-commerce and meet consumer expectations for home deliveries, faster shipping or same-day deliveries, some retailers have started reconfiguring their supply chain networks. This includes

[7] U.S. Census Bureau News (2017, May 16). "Quarterly Retail E-commerce Sales Report". Retrieved from https://www2.census.gov/retail/releases/historical/ecomm/17q1.pdf

moving distribution centers closer to their consumer base, and developing their own delivery networks of vehicles, technology and contractors.[8] This has caused a shift in the type of delivery trucks and their travel patterns. Rather than have a single large truck delivering to a retail location, the trend is for an increased number of smaller shipments to be delivered to residential locations.

Growth in technology is also bringing about changes in logistics and delivery systems. Similar to the shared mobility concept for personal vehicles, advancements in technology have allowed sharing of commercial vehicles and provided smartphone applications to better connect shippers, drivers and customers such as Convoy, Uber and Transfix. This is increasing the number of independent contractors using their personal vehicles to deliver goods, especially in the first-mile/last-mile space. Advances in vehicle technology are also changing the type of vehicles, including electric vehicles and cargo bikes, used to meet delivery demands in dense urban areas. There are other longer-term changes expected such as connected and automated trucks, which are anticipated to further transform freight movement in the region.

Growth in goods movement has increased pressure on the region's transportation system and impacted the reliability and efficiency of freight delivery. Changes in logistical patterns and growth pressures create challenges between modes and are driving competition for scarce curb space, alleyways, road and sidewalk spaces in certain cities. As jurisdictions around the region plan for the anticipated growth out to 2050, it is important to consider these recent changes in freight movement and understand how the two interrelate.

Consideration of Freight Needs in Planning

The considerations identified in this briefing paper were developed with input from freight stakeholders around the region. To help with this effort, staff worked with members of PSRC's Freight Advisory Committee and held one-on-one interviews with partners involved in addressing freight mobility, as well as reviewed state and national freight plans. The purpose of these discussions was to engage with the stakeholders, understand their perspectives, and obtain feedback on issues related to freight movement that should be considered as part of local land use decision-making.

[8] Black, T., Schatzker, E. (2018, Nov 6). "FedEx CEO Stares Down Threat from Amazon's Own Delivery Network". Retrieved from https://www.bloomberg.com/news/articles/2018-11-06/fedex-ceo-stares-down-threat-from-amazon-s-own-delivery-network

A consistent theme from stakeholder feedback was the need to simplify the concept of freight and provide education on the role of freight in everyday lives. Other common themes include understanding the different aspects of freight movement in the region; recognizing the varying nature and complexity of freight issues among jurisdictions; optimizing the freight system to accommodate both the growing movement of goods and people; and the need to be flexible, recognize local context and engage with the private sector in developing solutions. The paper also summarizes those freight issues that are broader than the context of growth and land use planning.

Listed below is a categorization of freight issues summarized in this paper, compiled from both stakeholder feedback and a review of other freight planning efforts in the state and across the country.

- Issues related to growth
    - Changing urban deliveries
    - Protection of industrial land and freight corridors
    - Impacts to congested freight areas
- Operational Issues
    - Technology
    - Regional truck parking
- Other

The following section describes each of these issues.

Issues related to growth

Changing Urban Deliveries

The growth in e-commerce is changing the way people purchase goods. Consumers now order online and expect their orders to be delivered to them within a certain time window, sometimes even within the same day. While the convenience of online shopping allows consumers to avoid making a personal trip to the store, it requires the retailer to send a truck or a delivery vehicle to transport the goods to the consumer's preferred location, often their residence.

Deliveries to commercial/retail locations have always been integral to urban areas – for example, grocery stores or apparel stores in downtown areas receiving deliveries of relevant products. The growth in e-commerce is significant in that it is not only increasing the number of deliveries but is also changing the nature of urban deliveries. Rather than primarily delivering to commercial/retail locations, carriers such as UPS are now seeing a significant increase in the number of deliveries to residential

locations.[9] While commercial/retail locations typically have supportive delivery infrastructure such as loading docks and load/unload zones, many of the private residences and high-rise apartment buildings in urban areas do not have the needed infrastructure and require the use of public right-of-way,[10] adding to traffic challenges in these areas.

Photo Credit: Torbakhopper, 2013

The impacts of the growing e-commerce movement and the changes in the "last-mile" segment connecting the retailer to the final consumer are already being felt, especially in dense urban areas. These impacts include growing congestion on local streets, increasing competition for access to curb space, inadequate parking availability, lack of supportive infrastructure for deliveries, rising modal conflicts and growing enforcement challenges, to list a few. While cities have started to respond to the challenges posed by changing urban freight, e-commerce is expected to continue its robust growth, bringing along new retailers, technologies and shifting consumer demand.[11] The convergence of e-commerce and population/employment growth is expected to continue to create challenges for cities and urban areas.

It is important to recognize the changing nature of urban deliveries in planning for growth. Urban freight movement is influenced by a variety of factors within a jurisdiction such as the diversity of land uses, density, development patterns, and building codes. Therefore, urban freight considerations and impacts to and from freight movement need to be part of the policy conversations on how to plan for growth. Additionally, the provision of freight supportive infrastructure such as load/unload zones and delivery

[9] Zaleski, A. (2017, April). Cities seek deliverance from e-commerce boom. Retrieved from https://www.citylab.com/transportation/2017/04/cities-seek-deliverance-from-the-e-commerce-boom/523671/

[10] University of Washington (2019, January). The Final 50 Feet Urban Goods Delivery System. Seattle Department of Transportation. Retrieved from https://depts.washington.edu/sctlctr/sites/default/files/SCTL_Final_50_full_report.pdf

[11] McKee, J. (2018, September 11). Global digital commerce sales to near $6 trillion by 2022. Retrieved from https://www.forbes.com/sites/jordanmckee/2018/09/11/global-digital-commerce-sales-to-near-6-trillion-by-2022/#6f2212094c5a

bays should be factored in as jurisdictions work to provide new and redesign existing infrastructure.

The urban freight environment involves a range of public and private stakeholders, including local jurisdictions, private developers, businesses, truckers, shippers and carriers. Solutions to address urban delivery challenges thus require collaboration and active engagement of various stakeholders in the decision-making process. For example, cities such as Washington, D.C. and New York have piloted overnight/off-peak deliveries by providing financial incentives to businesses and truckers, which can help reduce traffic congestion and improve the flow of freight in and out of the city. However, this approach also involves significant adjustments to complex supply chain and logistics systems, thus requiring commitment from private freight companies to ensure successful implementation.

Other commonly used approaches to better manage urban deliveries include improved curbside or loading area management using reservation/pricing systems, use of alternative vehicles more suited for the urban environment such as cargo bikes, consolidation of deliveries into centralized pick-up locations, public-private partnerships to reduce dwell time within private buildings and high-rises, and modernization of building codes to provide appropriate loading facilities.[12, 13, 16] While the roles of stakeholders vary, successful implementation in each of these strategies involves commitment and participation from the relevant parties. As such, engagement with freight partners needs to be an important consideration for local jurisdictions.

Protect and Preserve Industrial Lands

There are 13 subareas in the central Puget Sound region with concentrations of industrial lands and manufacturing uses, including nine regionally designated manufacturing/industrial centers (MICs). For the purposes of this paper, industrial lands are inclusive of traditional uses such as manufacturing and warehousing areas; seaports; airports and air cargo; freight and railroad terminals; and supportive uses such as laboratories, repair services, etc. Industrial lands are a significant contributor to the region's economy and depend on key transportation infrastructure; in addition,

[12] Urban, A. (2017, April 13). With online shopping on the rise, cities look to address congestion impacts of deliveries. Retrieved from https://mobilitylab.org/2017/04/13/role-of-deliveries-in-congestion/

[13] Chicago Metropolitan Agency for Planning (2017). Regional Strategic Freight Direction. Retrieved from https://www.cmap.illinois.gov/documents/10180/826017/FINAL+Regional+Strategic+Freight+Direction+with+cover_2-6-18.pdf/88a957e1-249b-4b54-d093-f53b144ee102

they are each unique in terms of their growth and development patterns, jobs created, required land area, and impacts generated.[14,15]

Freight stakeholders continue to stress the importance of protecting and preserving industrial lands, while responding to growth pressures in the region. Preventing encroachment and providing supportive infrastructure and services will ensure that the current and future users of industrial lands operate efficiently and are well suited to accommodate the changing nature of manufacturing and industrial uses, typically driven by the private sector.

VISION 2040 contains policies that support protection of industrial lands throughout the region. In addition to general policies on maintaining and supporting manufacturing/industrial centers, VISION 2040 specifically includes policy MPP-DP-53 to "Protect industrial lands from encroachment by incompatible uses and development on adjacent land."

PSRC's 2015 Industrial Lands Analysis provides potential policy and regulatory tools for local jurisdictions to consider in protecting and enhancing industrial lands in the region. Land use strategies identified include ensuring an adequate supply of land for industrial uses by identifying and protecting priority users of industrial lands, limiting non-industrial uses on industrial lands, increasing the supply of land zoned to accommodate low-impact industrial uses, and retaining large parcels for large industrial needs. Please refer to the Industrial Lands Analysis report for more details on the importance of industrial lands in the region and the broader set of strategies developed to strengthen these areas to accommodate the anticipated economic growth in the region.

Example: Protection of Air Cargo Supportive Land Uses

Air cargo needs are an example of the importance of protecting supportive land uses. Air cargo provides access to domestic and global markets via an air carrier. The majority of air cargo activity in the state is concentrated around Seattle-Tacoma (Sea-Tac) International Airport followed by Spokane International Airport and King County International Airport (Boeing Field). Across the state, air cargo has grown every year

[14] Puget Sound Regional Council (2016). Regional Centers Framework Update Project: Background and Findings. Retrieved from https://www.psrc.org/sites/default/files/centers-framework-background-paper.pdf

[15] Puget Sound Regional Council (2015, March). Industrial Lands Analysis for the Central Puget Sound Region. Retrieved from https://www.psrc.org/industrial-lands

since 2011 and this trend is expected to continue with Sea-Tac maintaining the largest share of air cargo activity.[16]

The ability of the airports to accommodate growing air cargo volumes is dependent on complex elements such as the availability of on-airport facilities and services (airlines, ground handlers, cargo terminals, aircraft parking, on-airport parking, etc.), off-airport facilities and services (trucking terminals, warehouses and sorting facilities), and efficient access to the transportation system.

A potential concern in this context of growing air cargo volumes is consideration for the need for expanding air cargo facilities near airports. Another aspect to note is that while air cargo is moved by an air carrier from one airport to another, trucks are required to move the cargo to and from the warehouses, sorting facilities or the final destination. Growth of other users in the surrounding areas has the potential to impede the movement of both people and cargo and cause disruptions to the transportation system. Considering the anticipated regional growth and rising air cargo volumes, it is important to thoroughly understand the impacts on mobility of all users when making decisions on the location of growth.

Preserve and Enhance Freight Corridors

Photo Credit: Ohadby, 2006

Another area of concern is the need for continued preservation and enhancement of corridors identified as critical for freight mobility and goods movement. While each jurisdiction may have specific requirements for designated freight corridors within their boundaries, in general, to be operationally successful, these corridors require certain design elements to accommodate and enhance freight movement, including appropriate signal heights, bridge heights, median design, turn radii, paving materials and lane widths.[17]

[16] Joint Transportation Committee (2018, Dec 21). Washington State Air Cargo Movement Study – Final Report. Retrieved from http://leg.wa.gov/JTC/Documents/Studies/AirCargo/JTCAirCargoMovementStudy_FinalReport.pdf

[17] City of Tacoma (2015, December). Transportation Master Plan. Retrieved from http://cms.cityoftacoma.org/PublicWorks/Engineering/TMP/TacomaTMP_FINAL_Jan6th_2016.pdf

As jurisdictions develop policies on long-term growth, it is helpful to understand the impacts to and from freight movement along these corridors. For example, investments designed to enhance livability and improve the urban streetscape may result in infrastructure that is incompatible with the needs of freight delivery modes. If those investments are on a designated freight corridor, there could be resulting challenges in traffic, parking, access, safety and enforcement. Similarly, as cities decide on what corridors to designate for freight movement, or the preferred location of various freight modes, considerations of existing or planned growth and multimodal infrastructure should be included to provide a balanced perspective.

In another instance, a city may implement policies to create a more comprehensive, multimodal transportation network by designating certain routes originally identified for freight movement as transit corridors. The roadway design requirements for transit movement are different than those required for freight movement. A lack of understanding of these inherent differences in roadway design needs can create potential conflicts of interest between these modes. In the long run, such actions could impede both goods movement and transit mobility, and in turn hurt the city's economic vitality and quality of life.

An example of planning that considers all users is the City of Redmond's establishment of a two-tier freight route system as part of their Transportation Master Plan.[18] The two-tier freight system includes "primary truck streets" and "truck access streets." Primary truck streets accommodate through truck traffic. The priority on these streets is to support truck operations and address truck needs through planned improvements and appropriate street design standards (pavement depth, turning radii at intersections, etc.). Truck access streets support access and movement of trucks between major industrial and commercial areas in the city to primary truck streets. The priority on these facilities is to accommodate and integrate trucks with other modal users. While truck needs are considered while making improvements on access streets, the needs of other modal users may take priority in certain locations. The city's intent in establishing this two-tier system is to better integrate all modes and address mobility of all system users.

[18] City of Redmond (2017, August). Transportation Master Plan. Retrieved from https://www.redmond.gov/464/Transportation-Master-Plan

Congested Freight Areas

4th Street Train Crossing, Marysville, WA
Photo Credit: Dan Bates, The Herald

Another area of potential concern is the need to be cognizant of how growth may exacerbate existing areas of freight congestion at rail-road crossings and truck bottlenecks. Locations with at-grade rail-road crossings often have safety, mobility or environmental challenges.[19] In recent years, railroad companies have been increasing train lengths to increase efficiency and handle the growing goods movement, thus adding to traffic congestion and delay at at-grade rail-road crossings.[20] Additional traffic from new development in the area can exacerbate the traffic and safety challenges at these rail-road crossings. Similarly, traffic from new development can increase the number of both freight and passenger trips on already congested facilities, adding to mobility, delay and reliability challenges. It will be important to properly examine the impacts to and from freight movement as cities plan for growth.

Operational Issues

Technology

Freight technology is advancing at a rapid pace. Some of the overarching developments in the freight technology environment include increasing data availability and connectivity; advancements in information and communication technologies (ICT) enabling sharing of assets, services and platforms; growth of electric and alternative powertrain technologies; and innovations in connected and autonomous vehicle (CAV) technology.[21] The rapid changes in technology are expected to enhance the efficiency

[19] WSDOT (2014, March). Washington State Rail Plan 2013-2035. Retrieved from https://www.wsdot.wa.gov/sites/default/files/2019/03/08/Rail-Plan-20132035.pdf

[20] Machalaba, D. (2018, June 15). "Why Railroads Are Making Freight Trains Longer and Longer". Retrieved from https://www.wsj.com/articles/why-railroads-are-making-freight-trains-longer-and-longer-1529055002

[21] New York State Department of Transportation (NYSDOT) (2018, February). Freight Technology White Paper. Ongoing Actions, Emerging Practices and Recommendations for NYSDOT Freight Plan. Retrieved from https://www.dot.ny.gov/content/delivery/Main-Projects/projects/P11618881-Home/P11618881-repository/Freight%20Technology%20Paper.pdf

of freight operations and impact the movement of goods, which in turn will influence how local jurisdictions plan for the future.

Advances in freight technology span the spectrum from more established technologies to emerging technologies and vary in terms of their exact impacts, benefits, and deployment timelines. The role of the public sector versus the private sector varies as well. While the public sector has a role in terms of policies and incentives, the private sector is primarily driving advancements in electric/alternative powertrains for large trucks based on factors such as costs, fleet lifecycle, return on investments, etc. Private companies such as UPS are taking an active role in overcoming obstacles to charging[22] and developing their own charging infrastructure for their vehicle fleet.[23]

Advances in data and ICT technologies combined with increased connectivity require new supporting infrastructure, including roadside systems (sensors, lights, meters), fiber optic infrastructure, and wireless infrastructure, to securely handle the large volumes of data collected, transmitted and managed. Changes in technology are also shifting the way jurisdictions use their existing public infrastructure. For example, public infrastructure such as utility poles have now become extremely valuable to private companies as a way of providing hardware for improved communication. Cities such as San Diego have started working with the private telecommunication providers to leverage their existing assets and better serve their residents.[24,25]

The importance of understanding and integrating the changing technology landscape and the associated infrastructure requirements should be incorporated into policy discussions. Jurisdictions around the region vary in terms of the capacity of existing infrastructure, as well as their ability to upgrade or provide new infrastructure to meet increasing demands from changing technology and ensure system resiliency. The ability to respond to these demands along with additional factors such as the

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[22] UPS (2018, March). Cutting Edge Deployment of Advanced Technology Vehicle & Charging Signals Shift Away from Reliance on Combustion Engine. Retrieved from https://pressroom.ups.com/pressroom/ContentDetailsViewer.page?ConceptType=PressReleases&id=1521473412769-768

[23] Carey, N. (2018, February). UPS-Workhorse electric van deal shows progress on charging costs. Retrieved from https://www.reuters.com/article/ups-workhorse-group-electric-vehicles/ups-workhorse-electric-van-deal-shows-progress-on-charging-costs-idUSL2N1Q6117

[24] City of San Diego. Smart City: San Diego deploys the world's largest smart city platform. Retrieved from https://www.sandiego.gov/sustainability/energy-and-water-efficiency/programs-projects/smart-city

[25] Woods, E. (2017, April). San Diego aims to set the pace for smart city networks. Retrieved from https://www.forbes.com/sites/pikeresearch/2017/04/21/san-diego-aims-to-set-the-pace-for-smart-city-networks/#d5125ab756b2

availability of space within a jurisdiction for supporting infrastructure such as location of cell towers within a jurisdiction need to be considered when developing policies on where and how to locate the anticipated growth in population and employment.

Refer to PSRC's briefing paper on Technology for a broader discussion on changing technologies and the considerations relevant for regional and local stakeholders within the context of land use and development.

Regional Truck Parking

The majority of freight in the region – approximately 68% of regional freight movement by weight and approximately 60% by value – is transported by trucks.[26] Trucks are the most prevalent choice for goods moved long distances and for short distances serving local delivery. The efficient movement of goods by trucks depends on access to secure and accessible parking that provides drivers a safe and legal location to rest, detach loads, stage vehicles, and ensure timely deliveries of goods.

The state of Washington faces some of the most severe truck parking challenges in the country. WSDOT's Truck Parking study[27] provides a comprehensive overview of truck parking issues across the state including the central Puget Sound region. Some of the factors identified as influencing parking demand include an increase in truck traffic due to the growing economy, increasing congestion and freight delays, driver hours-of-service regulations, insurance requirements, industry changes such as just-in-time logistics, and state and federal regulations. The ongoing challenge of inadequate truck parking can be expected to intensify due to the projected growth in goods movements and truck traffic.

Truck parking is currently concentrated in certain locations around the region. The cost of land in urban areas, along with competing demands for best use of available land, creates a challenge in expanding truck parking. In some cases, concerns regarding safety, environmental and noise impacts on surrounding areas make it difficult to gain community acceptance of new or expanded facilities. Truck parking needs also vary based on a combination of factors including location, time of day, weather and demand, and involves various entities in the private and public sector, each with specific roles and responsibilities. Within Washington, WSDOT is responsible for the state highway system including many facilities used for truck parking, while local

[26] Puget Sound Regional Council (2018). Regional Transportation Plan Appendix J: Regional Freight and Goods Movement. Retrieved from https://www.psrc.org/sites/default/files/rtp-appendixj-freightandgoodsmovement.pdf

[27] WSDOT (2016, December). Washington State Truck Parking Study. Retrieved from https://www.wsdot.wa.gov/Freight/truckparking.htm

jurisdictions are responsible for zoning, land use permitting, enforcement, and policies on parking within their boundaries.

Various strategies have been identified at the federal, state and local levels to address truck parking challenges. These include:

- Adding/expanding parking spaces
- Developing parking partnerships with the private sector such as allowing use of vacant private lots and coordinating with shippers/receivers to allow on-site parking.
- Using technology to enhance infrastructure such as real-time parking availability systems
- Collaboration and developing strong relationships with stakeholders to develop supportive policies, including appropriate municipal codes to create truck parking or designate truck parking areas, creation of policies incentivizing shifting of freight operations, etc.[28,29]

Local jurisdictions within the region such as the City of Auburn have tried to address truck parking challenges by developing a permitting program. This requires trucks to register and obtain a commercial parking permit and identifies locations where trucks can park within the city's right-of-way. This ensures trucks are parked in locations that are legal and do not impact city streets.

Given the challenges associated with truck parking, a continued focus on this topic will be important, including understanding the underlying causes for inadequate parking, researching best practices from other regions, and exploring solutions that can be applied in the central Puget Sound region.

Other

Provided below is a brief description of freight issues highlighted by stakeholders that are broader than the context of land use and development focused on in this paper.

Streamlined Sales and Use Tax Agreement (SSUTA)

The SSUTA law passed in 2008 changed the way sales tax is collected. With the passage of this law, cities with large warehousing facilities have seen significant

[28] Atlanta Regional Commission (2018, April). Atlanta Regional Truck Parking Assessment Study – Final Report. Retrieved from https://atlantaregional.org/transportation-mobility/freight/atlanta-regional-truck-parking-assessment-study/

[29] FHWA (2018, October). Truck Parking Initiatives: Presented to the North Jersey Transportation Planning Authority. Retrieved from https://www.njtpa.org/getmedia/001c6108-2e1d-4f99-b460-e76c83f39f7a/FHWA-Truck-Parking-Presentation.pdf.aspx

decline in revenue as sales tax on transactions is now allocated to cities where consumer purchases are made rather than the cities from where the products are shipped.

Within this context, stakeholders noted the need for continued efforts in the form of supportive policies, incentives, and creative solutions to encourage local jurisdictions to retain freight-related land uses and infrastructure.

Freight congestion and bottlenecks

A number of freight corridors in the region (e.g. in Seattle, Tacoma, Auburn and Federal Way) typically rank among the top 100 truck bottlenecks in the U.S.[30] The presence of bottlenecks affects the movement of freight and impacts the reliability of the freight transportation system. With growing goods movement and increasing congestion, bottlenecks will remain an ongoing challenge for freight mobility.

Refinement of analytical tools and improved data availability to better model freight movement

Data on goods movement is typically collected by federal agencies along with numerous public and private entities involved in freight.[31] A lack of data coordination among these entities combined with the fact that freight issues vary by geography (e.g. urban vs. rural, regional vs. state, etc.) makes it difficult to effectively model freight movement and results in an incomplete understanding of freight.

Stakeholders pointed to the need for continuous engagement on this topic to better understand freight patterns, measure freight delays, evaluate system conditions and ensure that the region and state meet federal requirements on system performance.

In addition to the above list of issues, stakeholders also identified the following issues, which will continue to be addressed in PSRC's larger freight work program.

- Freight safety issues (e.g., Positive Train Control)
- Maintenance & preservation of freight assets
- Data opportunities due to technology

Summary

The purpose of this paper was to highlight areas of intersection between freight and land use. Consideration of freight during the planning process will be critical to ensure

[30] American Transportation Research Institute (2018). 2018 Top 100 Truck Bottleneck List. Retrieved from https://atri-online.org/2018/01/25/2018-top-truck-bottleneck-list/

[31] Transportation Research Board (2003). A Concept for a National Freight Data Program. Committee on Freight Transportation Data: A Framework for Development. Special Report 276. Retrieved from https://www.nap.edu/read/10793/chapter/1

that decisions regarding future growth and infrastructure support mobility for people and goods. Jurisdictions are encouraged to consider the issues identified here as they work towards their future comprehensive plan updates and land use decisions. PSRC will continue to engage on these and broader issues related to the region's freight and goods system and will continue to work with stakeholders moving forward.