

Future-Proofing Comprehensive Plans in Eugene and Gresham

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Eugene • Gresham

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COLLEGE OF DESIGN

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About SCI

The Sustainable Cities Institute (SCI) is an applied think tank focusing on sustainability and cities through applied research, teaching, and community partnerships. We work across disciplines that match the complexity of cities to address sustainability challenges, from regional planning to building design and from enhancing engagement of diverse communities to understanding the impacts on municipal budgets from disruptive technologies and many issues in between.

SCI focuses on sustainability-based research and teaching opportunities through two primary efforts:

1. Our Sustainable City Year Program (SCYP), a massively scaled university-community partnership program that matches the resources of the University with one Oregon community each year to help advance that community's sustainability goals; and

2. Our Urbanism Next Center, which focuses on how autonomous vehicles, e-commerce, and the sharing economy will impact the form and function of cities.

In all cases, we share our expertise and experiences with scholars, policymakers, community leaders, and project partners. We further extend our impact via an annual Expert-in-Residence Program, SCI-China visiting scholars program, study abroad course on redesigning cities for people on bicycle, and through our co-leadership of the Educational Partnerships for Innovation in Communities Network (EPIC-N), which is transferring SCYP to universities and communities across the globe. Our work connects student passion, faculty experience, and community needs to produce innovative, tangible solutions for the creation of a sustainable society.

About SCYP

The Sustainable City Year Program (SCYP) is a year-long partnership between SCI and a partner in Oregon, in which students and faculty in courses from across the university collaborate with a public entity on sustainability and livability projects. SCYP faculty and students work in collaboration with staff from the partner agency through a variety of studio projects and service-

learning courses to provide students with real-world projects to investigate. Students bring energy, enthusiasm, and innovative approaches to difficult, persistent problems. SCYP's primary value derives from collaborations resulting in on-the-ground impact and expanded conversations for a community ready to transition to a more sustainable and livable future.

About Eugene, Oregon

The city of Eugene is a central hub of commercial, educational, and recreational activity in the southern Willamette Valley. Incorporated in 1862 as “Eugene City,” residents sought to turn Eugene into a center of learning. To that end, they raised the initial funding to start the University of Oregon, now the city’s flagship university and public research facility.

With a population of just over 160,000 people, Eugene is Oregon’s second largest city and the county seat of Lane County. Located in the heart of the county along the Willamette and McKenzie Rivers, Eugene is recognized for its green landscape, recreational opportunities, and sustainability efforts. The city’s slogan, “A Great City for

the Arts and Outdoors,” reflects its commitment to the arts and culture as well as nature preservation efforts. Eugene is also popular for many nearby recreational opportunities, including Willamette Pass Ski Area, Fern Ridge Reservoir, and hiking and rafting along the McKenzie River.

About Gresham, Oregon

With over 110,000 people, Gresham is the fourth largest city in Oregon. Portland, the largest city in the state, borders it to the west. Gresham is ideal for families and businesses wanting to start something new and grow.

Gresham is near the Columbia Gorge National Scenic Area and Mount Hood, the highest point in Oregon. It has a wide variety of neighborhoods including: the Civic Center, known for its active transportation network, rapid transit connections, and residential,

commercial, and retail mix; Historic Downtown which offers a walkable blend of shops, restaurants, and service businesses; and Rockwood, one of the youngest and most diverse neighborhoods in Oregon.

Course Participants

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Executive Summary

As part of the Sustainable City Year Program, students in Rebecca Lewis’s Growth Management course were asked to assess the comprehensive plans of the cities of Eugene and Gresham, Oregon. Students sought to determine each city’s readiness for the deployment of new mobility services and autonomous vehicle and the continued growth of e-commerce deliveries, along with accompanied changes to warehousing and brick-and-mortar retail.

Students analyzed city comprehensive plans, focusing on the cities’ commercial and residential land use patterns. Each group compiled written reports detailing their research, analysis, and findings. In the reports, students noted positive steps that the cities are taking to create pathways for these new technologies and provided recommendations for areas of improvement. In addition to the reports, the teams presented their findings to representatives from both cities.

Students were divided into four different teams to analyze the comprehensive plans. Two teams each assessed the comprehensive plans of

the cities of Eugene and Gresham. For each city, one group focused on the topic of new mobility and the other analyzed e-commerce.

The class evaluated the two cities’ comprehensive plans through initial independent research on e-commerce and new mobility. Students also looked at case studies of other cities and steps they are taking to address the issues. Then, students reviewed *Envision Eugene Comprehensive Plan* and *Gresham Comprehensive Plan* for policies and regulations that were conducive to allowing new mobility technologies within their city limits.

Introduction

Traditional brick-and-mortar retail is transforming as e-commerce expands across cities and regions. The retail environment in Oregon is evolving with this trend.

Over the past three years, traditional brick-and-mortar retail employment in the state has decreased while e-commerce employment (including couriers, messengers, warehouses, storage, and call centers) has increased (Figure 1). Oregon expects e-commerce employment gains to be consistent at 1% per year. Nationally, large retailers are closing hundreds of locations or filing for bankruptcy as online sales and purchases become more prevalent.

This transitional period for traditional retail has implications for local and regional land use patterns, and transportation systems. In particular,

the rise of online consumerism affects the rate and accessibility of delivery services. Additionally, the closure of large retailers leaves a growing number of big box vacant structures with expansive and underutilized parking lots. In turn, dense and highly populated areas may not be conducive to home-delivery consumerism. Thus, planning for e-commerce is important as planners consider how to “future-proof” land use plans and policies to better accommodate e-commerce growth.

New mobility is changing not only how we get around, but how we utilize and value space. New mobility services

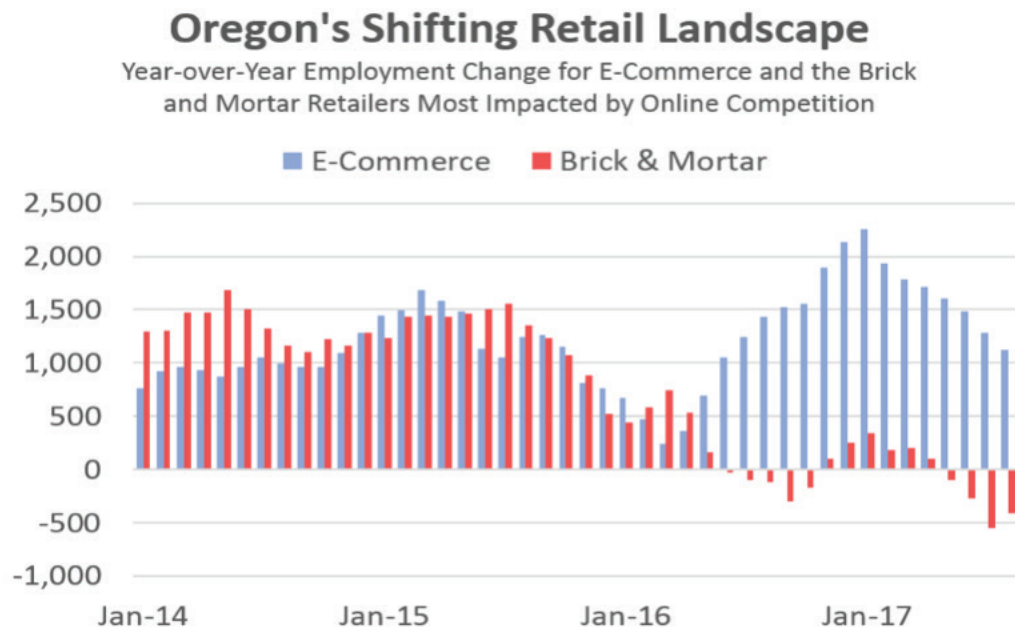


FIG. 1
Oregon's Shifting Retail Landscape

Data: CES employment seasonally-adjusted using X13
 E-Commerce: Nonstore Retailers (NAICS 454) + Couriers and Messengers (NAICS 492) + Warehousing and Storage (NAICS 493)
 Brick & Mortar: Clothing & Accessories Stores (NAICS 448) + Sporting Goods, Hobby, Book & Music Stores (NAICS 451) + General Merchandise Stores (NAICS 452) | Source: Oregon Employment Department, Oregon Office of Economic Analysis

such as ride-hailing, mobility as a service (MaaS), e-bikes, e-scooters, and autonomous vehicles have significant implications for how our cities function. Less parking and more drop-offs mean less competition for parking spots but more demand for curb space. Increased bicycle and scooter use may necessitate more docking stations in commercial areas, designated parking areas (i.e., defined areas for dockless systems), and more users on the street. Cities must be prepared for these and other changes new mobility will bring.

In metropolitan cities across the world, many forms of new mobility are already operating and changing everyday life. However, the prevalence of these services and their availability is not uniform. Local conditions strongly influence whether the introduction of

certain services makes sense financially and logistically. As a result, within metropolitan regions, the service areas of new mobility products are often confined to the urban corner.

As we examine the implications of new mobility services and e-commerce, it is critical that we recognize the inherent connection between private automobiles and our lifestyle, culture, economy, and environment. Our transportation systems and land use patterns likewise operate as an integrated ecosystem. While it is difficult to predict the effects of the next transportation revolution, we can be certain our residential neighborhoods and commercial centers will encounter new opportunities and challenges.

E-commerce Trends

With the rise of e-commerce, mid-sized distribution centers will choose to locate close to city centers and places of higher population densities. In a 2018 report, the Brookings Institute studied the geographic distribution and growth of e-commerce establishments across various metropolitan areas. They found that mid-sized e-commerce distribution centers are urbanizing the fastest and choosing to locate near central business districts (CBDs). Proximity to a CBD increases accessibility to transportation systems and high population densities, helping companies address the time-sensitive “last-mile” of delivery. Additionally, these types of distribution centers often have less parking, more services, and expanded weekend deliveries compared to traditional centers or warehouses. Some e-commerce companies are going a step further with the ‘hub’ model, which is a hybrid between storage and distribution centers.

E-commerce will impact storefront retail base of traditional brick-and-mortar by changing the use and tenure of commercial spaces. Though large retailer employment is decreasing, trends show that effective integration of e-commerce with the local retail environment can mitigate and reverse negative impacts on employment and economic development. Business models that serve both traditional and e-commerce shoppers will become essential as companies and brands look to short-term and creative storefront uses. Examples include pop-up

shops, experiential retail, and ‘click and connect’ omnichannel fulfillment storefronts that are accessible and convenient for consumers.

Mid-sized e-commerce distribution centers can cause additional impacts on local freight and street networks. Cities should be aware of potential challenges of integrating mixed-use residential and commercial developments with limited freight capabilities and storage. Many residences in urban areas do not contain package storage space, freight elevators, or parking for increased amounts of residential e-commerce deliveries. Commercial deliveries increasingly involve personal vehicles or similar models and schedules of traditional freight. This can increase the number of personal vehicles and freight companies executing time-sensitive deliveries during peak traffic times.

These trends and assumptions suggest several characteristics of e-commerce today, which looks more like mid-sized distribution centers and hubs in urbanized areas than traditional warehouses and distribution centers on city edges. Figure 2 summarizes these characteristics. It is important to note that these types of centers and hubs look and act differently than traditional warehouses and distribution centers. Therefore, it is likely that these trends and characteristics will have implications for how and where e-commerce may fit within a city’s existing land use patterns.

Characteristics	
Size	<ul style="list-style-type: none"> • Hubs: 30,000 – 50,000 square feet • Distribution Centers: 60,000 – 100,000 square feet
Location	Near dense residential areas with access to transportation systems
Freight & Streets	<ul style="list-style-type: none"> • Reduced large park trucking • Increased personal vehicle and 3rd party traffic • 'Last mile' delivery • Incoming freight and outgoing multimodal delivery
On-site capabilities	<ul style="list-style-type: none"> • Short-term storage • Packing and kitting • Deliveries • Freight capacity • Pedestrian access (hubs)

FIG. 2

Characteristics of mid-sized distribution centers and hubs

Disruption to Traditional Retail

In 2017, e-commerce grew 49% and accounted for 13% of all US retail sales (New Urbanism, 2018). This increase in e-commerce will impact how cities address residents' needs through infrastructure development and the support of e-commerce.

E-commerce is changing the way businesses interact with their suppliers and customers by changing how "consumers spend their days, transform the landscape, disrupt workers' lives, and reshape government's view of corporate power" (Economist, 2017). While e-commerce "will not obliterate all retail trade" (Economist, 2017), it will create more competition among brick-and-mortar businesses as well as other online businesses. These changes are likely to lead to drastic shifts in the employment base and retail markets. E-commerce's disruption of retail markets, even those previously thought untouchable, will require cities to adapt their infrastructure to handle the needs of these new business models. With a review of their current plans, cities can create adaptive policies and codes to

address these disruptions with their residents' well-being in mind.

Disruption to Physical Environment

E-commerce leads to online shopping and direct delivery to the customer through doorstep drop-off or pick-up locker locations. By the end of 2019, an additional 782 million square feet of warehousing space will enter the North American market (New Urbanism, 2018). Companies are using big data to anticipate purchase preferences and are seeking ways to be closer to customers for more efficient supply chains (Prevost, 2018). This is changing the look and location of warehouses. Warehouses and distribution facilities interact differently with the physical environment compared to traditional retail by requiring higher ceiling heights for pallets, loading docks for trucks, and less parking. Additionally, the abundance of e-commerce may cause traditional retail stores, big box stores, and large surface parking lots to become vacant. Cities will need to identify alternative uses for these properties and consider how

infrastructure can better support e-commerce to preserve the vitality and density of city centers. There has been a push for more experiential retail with e-commerce companies creating pop-up locations to store goods, allow customers to interact with products and pick up their purchases.

Disruption to Transportation and Parking

E-commerce changes how goods get to customers by creating a more individualized path for customers to receive their goods. E-commerce increases deliveries on city streets, which may create congestion and increase demand for commercial loading and unloading zones (Urbanism Next, 2019). This creates economies of scale when delivering multiple

packages to certain neighborhoods with one delivery truck. Additionally, it can result in fewer vehicle miles traveled when compared to individual customers driving back and forth to the same store.

Successfully delivering products to the consumer's door can be logistically challenging and costly for businesses, and may pose street hazards and safety concerns for cities. Roadway congestion and inadequate space for delivery vehicles in residential areas can be problematic. Companies are researching new ways to address last-mile deliveries. They are experimenting with smaller distribution centers in urban areas that could offer pick-up locations and non-motorized delivery options including bicycle and scooter deliveries (Ivonye, 2017).

E-commerce in Eugene

The city of Eugene is in the process of updating its comprehensive plan to address the community’s vision and goals while planning for the next 20 years. Students analyzed Chapters 2, 3, and 4 of “Envision Eugene” to assess the alignment of policies with three e-commerce assumptions.

When assessing the land use code, the project team analyzed where and how mid-sized distribution centers work within Eugene’s existing land use patterns. Currently, there are no references to e-commerce in the reviewed chapters, but students identified 27 policies and six zoning

districts that could support the identified e-commerce trends. *Figure 3* summarizes how each policy fits within the three e-commerce assumption categories: Density and Location, Commercial Land Use, and Freight and Street Networks.

FIG. 3

Alignment with Background Assumptions

Source: City of Eugene (2019). Envision Eugene Comprehensive Plan.

Chapter 2: Compact Urban Development and Design			
	Density and Location	Commercial Land Use	Freight and Street
2.1 Efficient use of land		X	
2.2 Efficient transportation patterns			X
2.3 Urban intensity	X	X	
2.5 20-minute neighborhoods	X	X	X
2.7 Key corridors and commercial areas	X	X	X
2.8 Area planning	X	X	X
2.10 Transit oriented development	X	X	X
2.13 Downtown vitality	X	X	
2.16 Connected downtown			X
2.17 Downtown housing	X		
2.23 Parking management			X
2.26 Crime prevention	X		
Chapter 3: Economic Development			
	Density and Location	Commercial Land Use	Freight and Street
3.5 Business retention and expansion		X	
3.6 Responsible economic development		X	
3.7 Home-based and micro enterprises	X		
3.8 Industry clusters		X	X
3.16 Parcel size and suitability		X	
3.22 West Eugene employment areas		X	
3.23 Flexible campus employment areas	X		
3.29 Transportation services			X
3.30 Technological support		X	
3.31 Public investment	X		
3.33 Urban economy		X	
3.35 Neighborhood vitality	X	X	
Chapter 4: Housing			
	Density and Location	Commercial Land Use	Freight and Street
4.7 Housing mixture	X		
4.8 Housing supply	X	X	
4.20 Coordination and partnerships	X		

Density and Location

Density and location are two key factors leading to urbanization of e-commerce. E-commerce operations want to be closer to CBDs and consumers. “Envision Eugene” offers policies that encourage development and use flexibility to increase connectivity of commercial and residential areas. For example, Envision Eugene recognizes commercial areas’ role in completing neighborhood design and offers flexibility to reduce barriers. It also provides options for home-based micro-enterprises and flexible campus employment areas. Envision Eugene acknowledges the importance of partnerships, coordination of services, and public investment in achieving these goals.

When looking at applicability to residential land uses, Envision Eugene’s “20-minute neighborhood” policy seeks to ensure needs and services are within a 20-minute walk for residents. Policies 3.35 (neighborhood vitality) and 2.26 (crime prevention) support business placement within neighborhoods while working to deter crime-related activities and promoting 20-minute neighborhoods. Lastly, policies 4.7 and 4.8 support mixed-use development by anticipating a shift toward multi-family housing and meeting the corresponding increased demand for needs and services. This is further demonstrated through Envision Eugene’s identification of downtown Eugene as a strategic area for additional housing and economic activity.

Commercial Land Use

E-commerce will affect traditional retail bases with possible changes in the uses and tenure of commercial spaces. When looking at commercial land use, Envision Eugene policies 2.1, 2.3, 2.8, 2.13, and 3.8 particularly emphasize urban areas. These planning initiatives address economic development by reducing regulatory barriers, especially along key transportation and commercial corridors. By reducing barriers, Eugene may encourage businesses to utilize e-commerce tools to sustain or expand operations beyond the local economy. Ideally, this will ensure responsible economic development reinforced by partnerships and leveraging new technologies.

With respect to residential impacts, Envision Eugene utilizes the 20-minute neighborhood concept, which supports neighborhood vitality while encouraging the preservation and creation of commercial spaces within various scales (e.g. neighborhood, community, and major commercial). With the emergence of e-commerce as a targeted industry for the city, future development, redevelopment, and infill should be appropriate to scale. This will be important to consider for areas closer to the CBD, like downtown and its surrounding neighborhoods, but also for areas with big box and large lot redevelopment opportunities, including west Eugene.

Freight and Street Networks

Transportation systems are vital to complete the exchange process of e-commerce. Eugene's existing transportation network largely supports freight travel. Ongoing system improvements along major corridors, such as Franklin Boulevard and I-105, will increase capacity to accommodate additional long-distance freight. However, siting mid-sized e-commerce distribution centers near downtown Eugene can cause additional impacts on local street networks. The City will need to address the rise in deliveries and drop-offs with accessibility for third party drivers, freight companies, and storage capabilities.

Envision Eugene policies 2.2, 2.5, 2.7, and 2.10 provide a foundation to support efficient and multi-modal transportation systems through 20-minute neighborhoods; focused development for key corridors and commercial areas; and integration of land use and transit-oriented development. In addition, policies 3.8 and 3.29 offer opportunities to join economic development with transportation through clustering of target industries, improved access to employment areas, and enhanced freight capabilities. These policies also

cluster e-commerce operations within priority corridors and ensure adequate access for information sharing, networking, and business growth.

Overall, Envision Eugene stresses the importance of multimodal transportation. This is pertinent when considering last mile delivery and the proximity of mid-sized distribution centers within employment and residential areas. For example, policies 2.8 and 2.16 encourage sustainable development in key commercial areas and corridors by adjusting regulatory practices to reduce connectivity barriers. Furthermore, policy 2.23 encourages incorporating parking management with market forces, treating parking as a community resource rather than a privately allocated good. As walkable neighborhoods and multimodal connectivity improve, parking needs will be lower. Personal vehicle and freight usage for last mile delivery is likely to increase with e-commerce centers, but with greater connectivity there is likely to be a decrease in overall need for private parking. This in turn can open parking spaces to redevelopment opportunities or adaptive reuses.

EUGENE LAND USE CODE

This section details the land use and zoning district designations most applicable to mid-sized e-commerce distribution centers found in the Eugene Land Use Code. To refine our review, we focused on references to e-commerce, warehousing, and distribution, which the code represents separately as ‘E-commerce’ and ‘Wholesale, Warehousing and Distribution’ (i.e. retail trade). Blending e-commerce and retail trade uses together provides a foundation for mid-sized distribution centers. These terms set analysis parameters for employment/ industrial and commercial land uses in code sections 9.2100 to 9.2471, wherein we reviewed corresponding requirements, standards, and uses.

Figure 4 summarizes code review findings, detailing permitted uses, shipping and delivery capabilities, and site specifications such as setbacks and height restrictions.

The findings reveal that the code contains instances where e-commerce distribution centers work with existing land uses. However, there are potential implications to siting mid-sized centers in zones that are typically closer to the CBD and areas with higher population densities. These implications are centered on: applicable retail trade uses for commercial zone districts, shipping and delivery restrictions, minimum setbacks and lower maximum building height restrictions, and integration of residential uses with e-commerce and retail trade uses.

Zone Districts	E-Commerce	Retail Trade	Housing	Shipping & Deliveries	Min. Setbacks	Max. Height
Light-Medium Industrial	P	P	NP	P	--	--
Mixed Use Employment	P	P	NP	P	15 feet	80 feet
Neighborhood Commercial	P	NP	P	NP	10 feet	35 feet
Community Commercial	P	NP	P	P	--	120 feet
Major Commercial	P	NP	P(S)	P	--	150 feet
General Office	P	NP	P(S)	NP	10 feet	50 feet

FIG. 4
Summary of Land Use Code Findings. Single horizontal chart.
 P = Permitted,
 NP = Not Permitted,
 P(S) = Permitted, with special use limitations
 Source: City of Eugene (2019).
 City of Eugene Land Use Code

E-commerce in Gresham

Gresham is a predominantly residential community of single-family detached homes and commercial buildings located along arterial streets and in commercial centers. The downtown area includes a mixed-use Central Business District along with other commercial uses located in neighborhoods around Gresham.

Seventy percent of the city's total land area is designated for residential use; thirty percent is designated for industrial/business park, mixed-use, and commercial (City of Gresham, 2005). (See [Figure 5](#)).

In anticipation of continued population growth, Gresham developed objectives within its comprehensive plan that specify how the City intends to create employment, attract new businesses, stabilize the economy, and preserve the character of single-family neighborhoods. Thematically, the plan emphasizes the following: economic growth (revitalized downtown corridors, transit-oriented commercial development); changing demographics of an aging and diversifying community; and the need for more employment opportunities within the local workforce. The Comprehensive Plan broadly describes how the city will "attain a larger share of the Portland area's employment base" with the region's projected growth pattern (Comprehensive Plan Volume II). A key component of the City's approach

to solving the discrepancy between the number of jobs and households is reliant on buildable industrial and business park land. This approach may be challenging as it relies on traditional manufacturing, office, and retail employment while potentially neglecting Gresham's physical land constraints and the changing economic landscape stemming from e-commerce.

Reinforcing the Comprehensive Plan, the Development Code defines special districts, land use permissions, and zoning overlays that aim to ignite growth and steer commercial development. Gresham organizes its land uses by two distinct types of commercial districts, seven residential districts, and two broad industrial districts. In addition, the City has created five plan districts, six overlay districts, and six corridor districts that detail specific uses and restrictions for smaller land units. The Community Land Map illustrates the different land uses within Gresham.

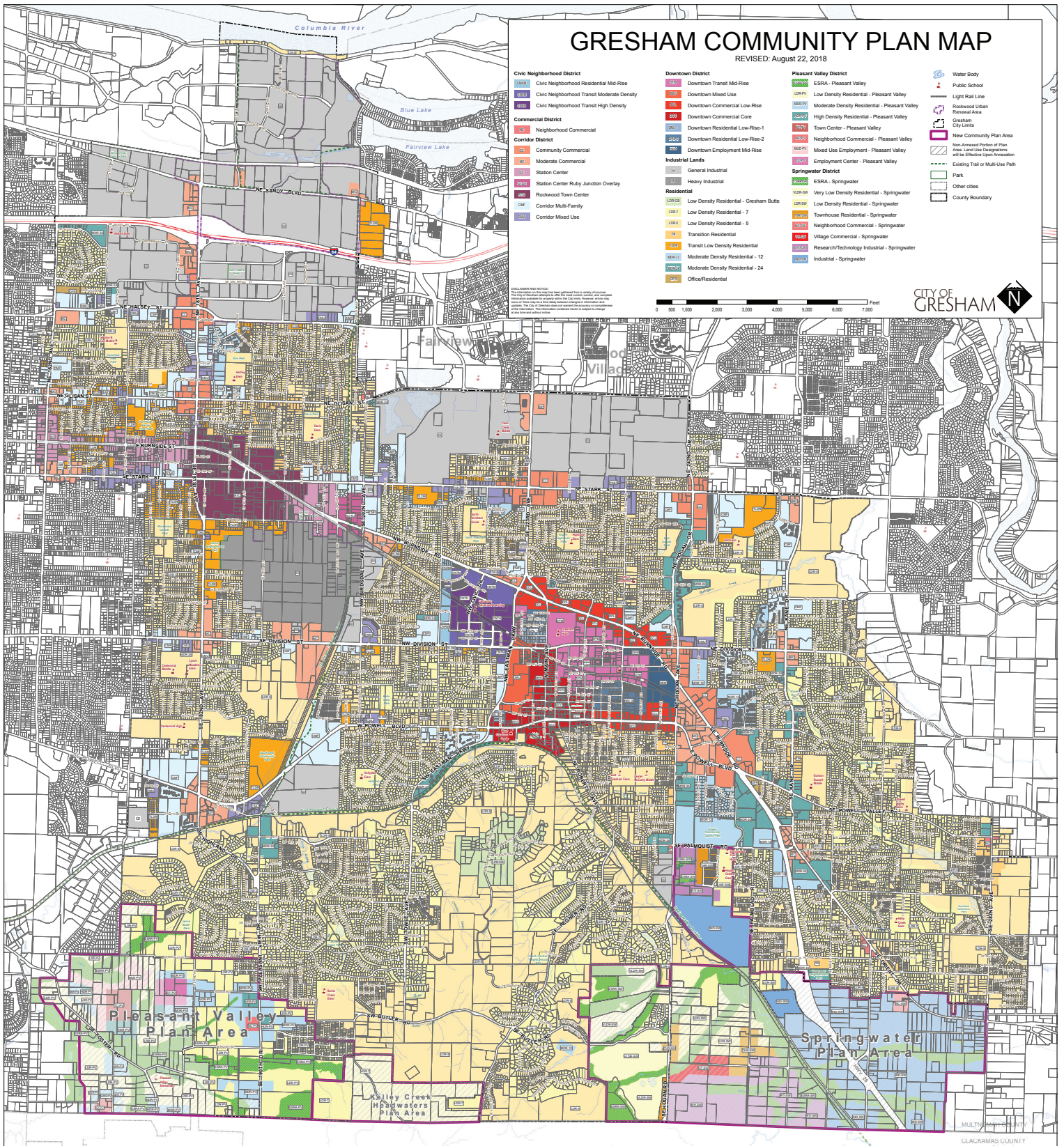


FIG 5
Map of the City of Gresham, Oregon
Source: Roadsnack.net, 2019

Retail Landscape and the Need for Flexibility

There is potential for an increase in the number of vacant commercial properties due to growing online retail business. Occupied storefronts preserve active public spaces, discourage crime and vandalism, and preserve neighborhood amenities and services. While it is not feasible to predict e-commerce's exact changes to the retail landscape, e-commerce will make existing properties available for alternate businesses, create new demands for non-traditional commercial spaces, and change the storage and distribution of goods.

Within the Comprehensive Plan, Policy I and Policy II of Commercial Land Use section 10.312 encourage repurposing commercial property and using compact development and infill rather than consuming new commercial lands. These policies will likely be relevant to businesses that want occupy vacant commercial space. The permitted uses for vacant properties will differ by land type and are defined in the Development Code.

Action Measure #14 (Land Use Policies and Regulations) introduces additional flexibility into the Development Code by keeping the language vague and the criteria for changes undefined. This measure allows for the unknown by suggesting that future planning efforts may need to develop district plans to "enhance opportunities for economic development." The future of retail is ambiguous, but the data suggest major changes are imminent. Incorporating Action #14 in the Comprehensive Plan acknowledges a changing pattern of development may be appropriate to promote economic growth and stability.

Physical Environment

In regards to commercial land, the Comprehensive Plan encourages infill, redevelopment, and adapting to future needs, which will most likely include e-commerce and related businesses. The Development Code, by contrast, appears restrictive and less accommodating of e-commerce. The City may need to fully adopt flexible plan districts, described in the Comprehensive Plan, before it can reasonably support e-commerce economies (Development Code Section 4.1000).

The City designates a plan district when "conditions within a specific area are such that unique planning and regulatory tools are required to achieve desired results" (4.1000 Enabling Legislation). A plan district can help the city address conditions (land use, economic, transportation, etc.) that are not working as desired in a specific area. Plan districts apply to small geographic areas or individual sites, enabling the City to plan with precision. A plan district is also a tool that Gresham can use to revisit zoning requirements and permitted uses over time.

The use of special plans and corridor districts enables the city of Gresham to designate where development can occur within smaller areas of land. Corridor districts are meant to stimulate economic growth along transit and existing arterial roadways in an effort to capitalize on infrastructure and create compact mixed-use neighborhoods. Land uses prohibited in commercial and residential districts may be permitted in a smaller corridor district. Permissions granted in these special districts may better accommodate e-commerce. For example, all but one of the corridor district permits live/work units (excludes corridor multi-family areas). Still, mini-storage

facilities are prohibited in any of the corridor districts. Figure 6 highlights discrepancies between the Comprehensive Plan and Development Code by comparing desired growth patterns described in the Comprehensive Plan with specific development codes that potentially conflict with stated goals, as they relate to e-commerce. In some cases, certain plan districts and corridor districts have nuanced permitted uses, as noted by an asterisk. The Commercial zone (NC) criteria referenced in the Figure 6 applies to limited areas within the City. Although not listed as part of Figure 6,

the City’s design districts (DT, Corridor, Rockwood) have more liberal live/work and commercial standards.

The current planning documents do not specify a strategy to attract e-commerce or support non-traditional land use in commercial, residential, and industrial lands. However, the City can use the legislative tools outlined in the Comprehensive Plan to make planning decisions that could serve the emerging e-commerce economy. By utilizing a combination of special plan districts and overlays, the city of Gresham has options to accommodate the changing physical environment.

FIG. 6

Gresham Policies as they relate to Ecommerce

¹Table 4.0120: Permitted Uses in the Residential Land Use Districts

²Table 4.0220: Permitted Uses in the Commercial Land Use Districts

³Table 4.0320: Permitted Uses in the Industrial Land Use Districts

Comprehensive Plan	Development Code	As this relates to Ecommerce
<p>10.312 Commercial Land Use, Implementation Strategy #1 The City will meet consumer commercial services and retail needs by designating land for the development of regional, community and neighborhood scale centers.</p>	<p>Commercial Land Requirements</p> <ul style="list-style-type: none"> • 10,000 sq. ft minimum lot • 50% maximum lot coverage • 3-story max building height <p>Permitted Uses Commercial Land Use Districts^{1,2,3} Live/Work, transportation/distribution, warehousing, mini-storage not permitted</p>	<ul style="list-style-type: none"> • Supporting smaller scale ecommerce business needs will mean reconsidering the land use requirements and permitted uses.
<p>Economic Development Policies</p> <ul style="list-style-type: none"> • Provide for all forms of “live/work” opportunities. <p>Economic Development Action Measures</p> <ul style="list-style-type: none"> • Define live/work units, re-examine where they are permitted and determine if they should be allowed in additional land use districts. 	<p>Permitted Uses in the Industrial, Commercial and Residential Land Use Districts^{1,2,3}</p> <ul style="list-style-type: none"> • Live/Work space Not Permitted in Commercial, Residential, or Industrial Land Use Districts* 	<ul style="list-style-type: none"> • Small business owners, craftspeople, and artists who work out of their home may want to the option to have a “light industry” operation within the residential space. • The mix of housing and business may need to change. Buildings that offer makers spaces, packaging and shipping areas, supply storage, and studio spaces may present a new type of life/work space that is more attractive to ecommerce entrepreneurs compared to traditional property styles that mix business and housing.
<p>10.313 Industrial Land Use Policy #13 The City shall ensure that its economic development, land use planning and regulatory efforts support retention and growth of existing business and also address the needs of small businesses that wish to locate in Gresham.</p> <p>10.313 Industrial Land Use, Action Measure #16 Evaluate the feasibility of allowing emerging and nontraditional industrial uses to locate within or in close proximity to regional and town centers, transit corridors and other mixed-use districts.</p>	<p>Permitted Uses in the Industrial, Commercial and Residential Land Use Districts^{1,2,3}</p> <ul style="list-style-type: none"> • Warehouses are permitted in Industrial land, mini-storage facilities are not • Warehouses are not permitted in commercial or residential land • Mini-storage facilities are allowed on commercial land • Live-work units are not allowed on industrial, commercial or residential land* 	<ul style="list-style-type: none"> • Supporting the needs of small ecommerce businesses could mean allowing “light industry” where it is not currently permitted. • Ecommerce will demand new types of warehouses and mini-storage facilities, preferably located close to residents and not relegated to industrial land on the fringe of the city. • Ecommerce is blending storage and retail in new ways, in new locations

Transportation

In addition to considering how to accommodate smaller-scale distribution and storage facilities, the city of Gresham should consider how delivery vehicles can navigate streets and access businesses and residences. Solving for the last mile will be an ongoing challenge for e-commerce businesses, but in the meantime, fleets of frequently stopping delivery vehicles will use city streets. Special district development code sections detail roadway restrictions to prevent access to front entrances, prohibit curb cuts, and limit loading zones. For example, the City wants to stimulate economic growth and intensify the use of existing residential properties in the Downtown District. To that end, the Downtown Street Type standards (4.1143) do not support high frequency package delivery and pick-up, which are anticipated with the rise in e-commerce.

Attracting an Employment Base

Action Measure #2 of Gresham's Comprehensive Plan strives to achieve employment goals by expanding light industrial and business park areas. However, in Gresham there is a limited supply of buildable industrial lands, which has steadily declined since 1991 (Comprehensive Plan, Volume II, 83-84). The City's lack of large industrial sites means Gresham cannot rely on traditional industrial manufacturing to expand the local employment base. Fortunately, there is growing demand for smaller parcels of industrial land to support emerging e-commerce economies. Additionally, the retail landscape is changing due to e-commerce and new types of commercial properties will be needed to meet consumer needs. While the Comprehensive Plan does not address e-commerce's disruption on local retailers or recognize its potential employment opportunities, Gresham, like other cities, will need to decide how to support the demands of new e-commerce business models.

Background on New Mobility

The emergence of new forms of mobility in our cities has created a need to categorize and describe these new technologies. For this report, we define “new mobility” as: “transportation that is newly enabled by digital technology, primarily through the use of smartphone apps” (Urbanism Next Center, 2019, p. 6).

New mobility is a broad term that encompasses public and private transportation services, often available on-demand, made possible by mobile technology and real-time location data. These mobility technologies include: Autonomous Vehicle (AVs), Transportation Network Carriers (TNCs), bikesharing, e-scooter sharing, Mobility as a Service (MAAS), and ride-hailing. Below is a brief description of mobility technologies.

Autonomous Vehicles

AVs use advanced technology to provide transportation without a driver. AVs may be employed for personal use, as a fleet (including buses), and in freight transportation. Predictions show that the use of AVs will most likely be as synchronized fleets for corporate delivery and personal on-call transportation (Krause, 2018; Kirkpatrick, 2018; Everts, 2018; Verger, 2018; Reichmuth, 2018). AVs could improve traffic safety and speed times, improve the quality of commutes, and promote sustainability by more efficiently scheduling car trips.

Mass adoption of AVs could shift vehicle ownership trends from individual car ownership to a collective vehicle fleet. These impacts could include reducing the number of vehicles needed to serve a given population, decreased parking demand, and decreased environmental problems

from car pollution and the built environment.

While AVs have recently been tested, they are still relatively novel on the actual road. AVs are still prohibitively expensive to the average American and are not allowed to operate by existing state and federal regulations.

Bikeshare

Bikeshare enables consumers to use a smartphone or kiosk to ‘check out’ a bicycle and ride it within a predesignated area. Once the ride is complete the bike can be left in an appropriate place, sometimes at another dock or on the side of the road, where locational tracking navigates other consumers to the bike for its next trip. In this way, bikes can be conveniently shared with minimal intervention from a central transportation agency. Increasingly, bike share providers are departing from the docked model to a dockless model. The bikeshare model is costly, requires constant maintenance, and requires its consumers to be proficient in riding a bicycle.

E-Bikes, Bikes & E-Scooters

E-bikes, bikes, and e-scooters are fleet based, short-term rentals of electric scooters and bicycles (either manual or electric assisted). Bikes and e-scooters have a defined service area and can be either docked, like Jump’s e-bikes,

or dockless, like Bird’s e-scooter. This new mobility category does not include individually owned bikes. E-scooters combine the convenience of a bicycle with the speed of a motorized vehicle and “have the advantage of transporting people to their destinations 22% faster than bicycles.”

In summer 2017, e-scooters took roughly 65 cities across the nation by storm when they expanded across cities with no prior city approval, including a lack of business license. These cities were not pleased that the e-scooter companies responded by “asking for forgiveness” after the fact. The cities’ responses included cease and desist orders, fines, or both. For example, the city of San Francisco issued a cease and desist order to all major stand-up scooter companies operating within city limits due to pedestrian and other concerns.

Mobility as a Service (MaaS)

MaaS is an on-demand service, typically smartphone app-based, that integrates various modes of transportation into a single platform (Urbanism Next Center, 2019). MaaS allows consumers to buy mobility services based on their specific needs, instead of buying the means of mobility (Kamargianni, Li, Matyas, & Schäfer, 2016). Recent examples in the U.S. include Go Denver in Colorado and the Los Angeles Metro Transit Access Pass in California.

The core feature of MaaS is the integration of several new mobility technologies. It can include different features such as a unified mobile app, multimodal journey planning, a service bundle, and a fixed monthly subscription. The purpose of MaaS is to provide a more compelling alternative to driving your own vehicle than any single service would be if offered independently.

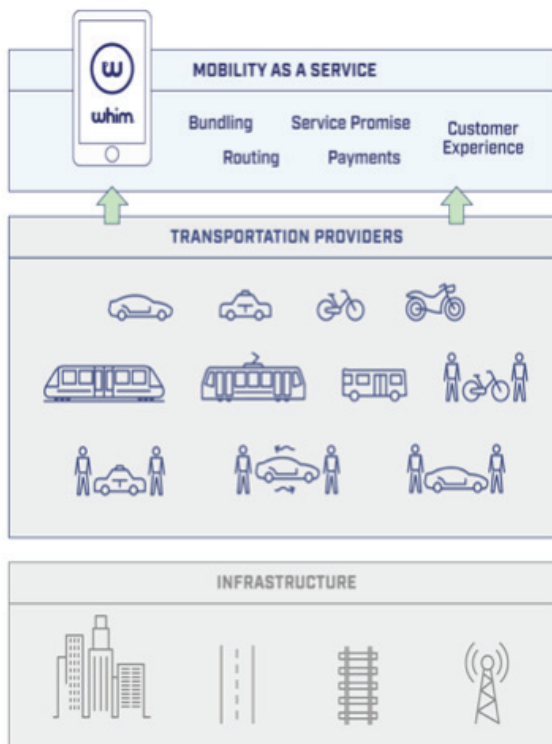


FIG. 7
Diagram explaining
MaaS integration
Source: MaaS Global

MaaS has been used in Europe for some time and is quickly making its way into larger U.S. cities. An example of MaaS is an app centralized around a city’s public transportation services with integration to TNCs or scooter apps. This provides consumers’ last-mile transportation to their destination. The use of such a platform could assist cities in further land use planning by allowing cities complete access to transportation data, thereby enabling cities to understand the transportation patterns in real time. Cities could analyze resulting travel patterns to see where to place new transit routes. MaaS has the potential to turn parking lots into urban parks.

New mobility technologies have been embraced by users of the services for their convenience, cost, and fun-factor, but there are impacts, which cities are quickly facing.

Ride-Hailing

Ride-hailing is a smartphone-based app service that connects passengers with drivers who use their own vehicle to provide rides. Rides can be either single or shared occupancy. Companies that

operate ride-hailing apps include Uber and Lyft.

IMPACTS OF NEW MOBILITY

The new mobility landscape is changing at such a rapid pace that cities are struggling to keep up with short- and long-term impacts. In this section we focused our analysis on the land use implications of new mobility with regard to parking and right-of-way.

Parking

In general, there are three types of parking: on-street parking, surface parking lots, and parking garage structures. Changes in on-street parking demand are typically addressed through minimizing roads by lane restructuring or reduction. Surface lots are often prime candidates for development into an intensified land use. Parking structures present unique challenges to planners because they are difficult to repurpose for any other use other than vehicle parking. There are some examples of parking garages being repurposed for residential use, but commenters note that these efforts are generally cost prohibitive.

FIG. 8
New Mobility Technologies in use
 Source: SAE International



The demand for parking is constantly changing with greater TNC usage rates. AVs require cities to reexamine their parking needs. Parking garages for AVs can help ease the desire for on-street parking, which can then be repurposed to create a pedestrian friendly streetscape.

Changing the way streets are planned can increase land available for other purposes such as allocating space for pedestrian interaction, low speed traffic, or development.

Right-of-Way

New mobility creates challenges for municipal right-of-way planning. New mobility increases demand on streets, but many streets are not equipped to handle the different modes of transportation being introduced in cities. Some new mobility devices can move the same number of persons in less space than the same number of persons in personal vehicles, which would free a significant portion of the right-of-way. Using street reallocation techniques such as road diets, cities can convert travel lanes into a more pedestrian friendly environment. On the other hand, when AVs become readily available there could be an increased demand for vehicle road space. The right-of-way is generally the greatest amount of land each city owns and therefore could be treated as an avenue for land use policy changes.

NEW MOBILITY

Assumptions

Prior to determining implications for Eugene and Gresham, students made several primary and secondary assumptions on how new mobility could impact residential and commercial land use. Due to the similar implications of new mobility technologies, the assumptions are

organized by effect rather than by technology. For each assumption we state the assumed effect and identify the responsible technologies.

It is important to note that some of the assumptions stated here contradict each other; this is not unexpected. As new technologies become available there will inevitably be shifts in ridership patterns. While some technologies are complementary in their objectives and can reinforce each other, others can decidedly shift ridership trends in opposing directions. Much of this will depend on a particular city's adoption process, current transit options, built environment, and demographics.

IMPLICATIONS

We foresee see these new mobility assumptions impacting Eugene and Gresham's commercial and residential land use in the following ways:

- Increases in land availability and infill opportunities in areas with extensive contiguous parking. Real estate values may drop if copious amounts of newly available land enter the real estate market all at once.
- Congestion and potential conflict between transportation modes at prime drop-off and pick-up locations. These locations include commercial areas, hotels, schools, and worship centers.
- Conversion of personal garages, particularly in those neighborhoods with detached garages. This may in turn have implications for infrastructure, such as the need to provide additional wastewater capacity.

CURRENT ASSUMPTIONS
<p>Opportunities for infill development and conversion will increase. As demand for parking decrease and the need for parking spaces drops, big box store parking lots can be infilled with other uses (Urbanism Next Center, 2019). Inner-city parking garages can be converted to other uses as well, such as apartments.</p>
<p>Drop off and pick up spots will become highly contested. As the use of ride-hailing services and AVs increases there will be greater competition for prime drop off and pick up locations (Crute, Riggs, Chapin, & Stevens, 2018). Businesses will need to consider how to reconfigure existing space to best accommodate these changes while balancing the needs of all transportation modes.</p>
<p>Personal garages will be converted. As car ownership drops due to the proliferation of more acceptable alternatives, personal garages, no longer used to store cars, can be converted into other uses. Identified alternative uses include home offices, small businesses and guest houses (Schlossberg, Riggs, Millard-Ball, Shay, 2018).</p>
<p>Real estate values near public transportation hubs may fall. New transportation options may decrease public transit ridership by providing other viable alternatives. If public transit ridership decreases the value of lands around transit hubs may drop (Erhartic, 2017).</p>
<p>Real estate values near public transportation hubs may rise. As small scale transit options, like e-bikes, bikes, and e-scooters, become available and easier to access, potentially through MaaS, they are able to bridge small but consequential gaps in public transit, such as the first-mile/last-mile dilemma (Trent, 2018). In this dilemma, potential public transit riders opt not to ride due to the initial distance to a transit station or the final distance from a station to their destination. As new mobility bridges such gaps, transit ridership may increase, driving up real estate values around transit hubs.</p>
<p>Cities will continue to sprawl. As AVs increase tolerance for longer commutes there will be more demand for homes at the city's edge where real estate prices are lowest (Urbanism Next Center, 2019).</p>
<p>Commercial and residential areas will need to provide additional bike and e-scooter parking. As e-bikes, bikes, and e-scooters become easier to access commercial areas and higher density residences will want to consider providing additional parking and amenities aimed towards this group (Nisensen, Crowther, 2018). These include such things as covered, lit, well located, bicycle and scooter racks, potentially with charging capability.</p>

FIG. 9
 Current Assumptions
 of New Mobility
 Implications by Effect

- Land values near transit hubs may shift. These include the centrally located transit stations like MAX stations in Gresham and EmX stations in Eugene. How land values shift will depend on the type of new mobility that is adopted as well as the adoption process. Extensive parking areas around transit stations could provide lots of opportunities for infill, which could eventually boost transit ridership and land values.
- Increased pressure for homes at city edges, particularly in areas that are less built up than others.
- Increased need for bike and e-scooter amenities, particularly in areas frequented by non-drivers, commercial and entertainment areas, and around transit stations. This will encourage multi-modal transportation.

Comprehensive Plan Assessments

Students analyzed comprehensive plans in Eugene and Gresham to determine how each city is preparing for new mobility technologies. For these assessments, students analyzed Eugene’s “Envision Eugene” document and Gresham’s “Comprehensive Plan” document. Findings for each document are presented in this section.

EUGENE PLAN ASSESSMENT

This section provides an analysis of “Envision Eugene,” (EECP) the controlling document that guides the future land use development of the City. The EECP is the result of Eugene’s efforts to comply with statutory requirements by adopting Eugene-specific policies to address land use issues. The Plan has been in development since 2010. When complete, EECP will contain goals that articulate overarching community aspirations and policies that provide a consistent course of action to attain these goals. Goals: 1) denote the aspirations for the community in broad statements not necessarily attainable and 2) establish consistency for the policies.

Currently, EECP is only partially complete, with draft chapters for Housing (Chapter 4) and Compact Design and Urban Development (Chapter 2). Although neither of these chapters discuss land use policies in the context of new mobility, there are goals and policies in place that would assist Eugene in adopting new mobility technologies.

Chapter 2 stresses that efficient transportation is a long-held value of the city and is central to the community’s vision for how Eugene should grow. The City believes that compact urban design is an essential segue into transportation improvements, especially since

funding will be more effective when concentrated within a smaller geographic area. The focus on transportation has land use implications as the two are intertwined. For example, Goal Two calls for directing growth to well-connected areas that support efficient transportation options. Furthermore, Policy 2.2 promotes energy and resource-efficient transportation options that can promote new mobility. It also suggests integrating new mobility and new developments by requiring storage spaces for these new devices.

Chapter 4 contains little discussion of the intersection of transportation and housing; it appears that most of the transportation emphasis is located in Chapter 2. While Envision Eugene says little directly about new mobility technologies, the plan contains what could be the foundations of an effective mobility policy.

GRESHAM PLAN ASSESSMENT

To assess whether the city of Gresham is prepared for the implications of new mobility, students analyzed the City’s Comprehensive Plan (2005). While the Plan contains broad guidance for land use, development, and infrastructure, our content analysis only focused on residential and commercial land policies. In this section, we discuss now the policies contained in Gresham’s Comprehensive Plan relate to our

previously stated assumptions about new mobility technologies:

- Infill: Opportunities for infill development as demand for parking decreases.
- Curb Space: Drop off and pick up spots will become highly contested.
- Parking Conversion: Personal garages will be converted.
- Real Estate Value Fluctuations Near Transit Hubs: Real estate values near public transit may fall; real estate values near public transit may rise.
- Sprawl: Cities will continue to sprawl.
- Bike/Scooter Parking: Commercial and residential areas will need to provide additional bike and e-scooter amenities.

Based on the results of our New Mobility Audit, shown in [Figure 10](#), the only type of new mobility available in Gresham today is ride-hailing. The two most well-known ride-hailing providers, Uber and Lyft, are available in Gresham. However, since both the city of Gresham and the State of Oregon have no operating regulations for ride-hailing providers, they do so under no governmental oversight (Urbanism Next Center, 2019). Uber and Lyft offer a similar suite of ride-hailing services. [Figure 10](#) shows the various types of new mobility options customers in Gresham have.

Given Gresham’s proximity to Portland, one may presume new mobility modes introduced in Portland would extend to Gresham. However, this is not the case. In fact, when e-scooters were introduced in Portland during a 2018 pilot program, Gresham notified the vendors that it is illegal to operate dockless e-scooters in City limits without a business license.

It is important to note that Gresham’s Comprehensive Plan makes no direct reference to new mobility technologies. However, it contains policies that encourage transit-oriented development—compact, walkable, mixed-use communities that reduce automobile dependency for mobility (Transit Oriented Development Institute, 2019). Policies in the plan establish commercial centers and corridors, stress multi-modal connections, call for reduced reliance on automobiles, and implement parking and growth management strategies (see Appendix C for a detailed list of such policies). Although new mobility services such as TNCs and AVs are not directly addressed in the plan, it lays a foundation of policies that can be interpreted to apply to such technologies.

We posit that new mobility technologies will be primarily fleet-based and will correlate to a reduction in personal automobile ownership. This will in turn reduce parking demand, causing land that is currently dedicated to parking to become under-utilized. That land could then be redeveloped through infill, contributing to a more compact urban

FIG. 10
New Mobility Audit,
City of Gresham, 2019

RIDE-HAIL-ING	MOBILITY AS A SERVICE (MaaS)	E-BIKES, BIKES, & E-SCOOTERS	AUTONOMOUS VEHICLES (AVs)
✓	X	X	X

form. Gresham’s Comprehensive Plan lays the groundwork for this by facilitating infill development with Policy II of 10.312 Commercial Land Use:

“It is the policy of the City to provide an adequate amount of serviceable commercial land to facilitate the development of commercial centers or infill commercial strip development and prevent the need for lateral expansion of commercial strips along major streets.”

This same policy, by specifically indicating a desire to prevent the need for lateral expansion, is critical to sprawl mitigation that could potentially result from AV adoption.

The plan also contains design standard policies for single-family, multi-family, and commercial units that require parking impact minimization. These design standard policies could be extended and interpreted to convert on-street parking, parking lots, and parking garages to other uses such as e-bike and e-scooter parking. They can continue to allow the conversion of personal garages into accessory dwelling units (ADUs), home offices, or other uses. Finally, they could be used to regulate curb space by designating

locations for shared-vehicle loading and unloading spaces.

Our final assumption states that, depending on how localities respond to new mobility technologies, land values around transit hubs may either rise or fall. On one hand, the convenience factor of new mobility such as AVs and TNCs may decrease public transportation use, resulting in a depreciation of real estate value surrounding hubs. On the other hand, as first- and last-mile connections become less problematic with e-bikes, bikes, e-scooters, and MaaS, public transportation ridership may increase, raising the value of real estate around transit hubs. Gresham is currently poised for the latter of these two scenarios. The City’s comprehensive plan contains a laundry list of policies that promote residential and commercial development close to public transit hubs, calls for increased connectivity between transportation modes, and facilitates a reduction in automobile reliance. These policies are stated in [Figure 11](#); full policy text can be found in Appendix C.

FIG. 11
Gresham
Comprehensive Plan
Policies That Can Be
Applied to Regulating
New Mobility
Technologies

ASSUMPTION	POLICY IN PLACE
Infill, Sprawl	10.312 Commercial Land Use, Policy II
Curb Space, Parking Conversion, Bike/Scooter Parking	10.413.1 Design Standards for Single Family Attached Dwellings, Policy 6 10.413.2 Design Standards for Multi-Family Dwellings, Policy 7 10.413.3 Design Standards for Commercial Development in the Corridor District
Real Estate Value Fluctuation Near Transit Hubs	10.314 Downtown Plan District: Housing Policy 1, Downtown Land Use Policy 2, Downtown Transportation and Connections Policies 1, 2, 3, 5 10.319.1 Transit Corridor Plan Area, Policies 1 & 2 10.320 Transportation System, Policies 1 & 3 10.320.3 Bicycle System, Policy 1 10.320.4 Pedestrian System, Policy 2 10.320.5 Transportation Demand Management

Findings for Gresham and Eugene

GRESHAM

Gresham’s approach could better recognize the City’s physical land constraints and the changing economic landscape that is attributed to rising e-commerce. In Gresham there is a limited supply of buildable industrial lands with supply steadily declining.

However, a reduction in parking demand will free up available land that could be redeveloped through infill, contributing to a more compact urban form. A section of the Gresham Comprehensive Plan allows flexibility in the Development Code document. The Comprehensive Plan encourages infill, redevelopment, and adapting to future needs; the Development Code is restrictive and less accommodating of e-commerce. Gresham’s Comprehensive Plan makes no direct reference to new mobility technologies, but contains policies that reduce automobile dependency. The only type of new mobility available in Gresham today is ride-hailing.

Based on our current assumptions and assessment of the Comprehensive Plan, we conclude the city of Gresham’s residential and commercial land use policies are well-positioned to adapt but require further enhancements to withstand the adoption of new mobility technologies. Currently, Gresham’s land use policies emphasize reduced dependence on personal automobiles by locating housing near public transit hubs, and encouraging transit-oriented communities. This policy strategy

will suit the city well as new mobility services are introduced.

However, the City will want to evaluate its policies for curb access and most efficient use of space as new mobility technologies expand. This will become an issue as new mobility and delivery services increase. The City will also need to be prepared for the likelihood of increased residential and commercial structure development—especially close to downtown and at public transportation hubs—as new mobility will cause the infill of current parking lots. This new development will lead to increased population and density in movement on a daily basis, creating a potential need to upgrade infrastructure to support increased demand. Transportation options and availability will need to keep pace. Overall, the city of Gresham is moving in the right direction with an eye toward future new mobility options for city residents.

EUGENE

Currently, there are no references to e-commerce in the reviewed chapters of Envision Eugene, but there are 27 policies and six zone districts that could support e-commerce trends. The partially complete Envision Eugene Comprehensive Plan does not discuss land use policies in the context of new mobility, but there are goals and policies in place which would assist Eugene in adopting new mobility technologies.

Recommendations for Gresham and Eugene

NEW MOBILITY

In regards to new mobility, it is recommended by the groups that the city of Gresham should:

- Redefine “new mobility”;
- Develop a permitting and business license process;
- Establish district specific policies for e-commerce along and outside of areas of high-capacity transit routes;
- Reduce parking ratios;
- Build upon support for “flexible transit services” or on-demand transit;
- Develop an ongoing monitoring program; and
- Offer Mobility-related trainings for city staff.
- Ensure mixed-use zoning that accommodates smaller “hub” size distribution centers;
- Increase need for on-site package storage and loading and delivery drop-off in residential areas;
- Integrate residential uses within e-commerce compatible zones;
- Allow for greater code flexibility for commercial zones;
- Offer flexible leases;
- Provide technical & financial assistance;
- Partner with local small businesses;

- Include e-commerce trends in forecasting data;
- Develop performance metrics to gather data;
- Consider e-commerce parking impacts; and
- Consider e-commerce sites for the quickest implementation and redevelopment opportunities.

Regarding new mobility, the students recommend that the city of Eugene:

- Incorporate a specific parking management provision addressing drop off locations; and
- Impose regulations and tax schemes that would discourage excessive VMT (vehicle miles traveled). (See [Figure 12](#)—Timeline of recommendations regarding New Mobility, in Appendix A).

Full recommendations can be found in the appendices.

E-COMMERCE

The recommendations for the cities of Gresham and Eugene regarding e-commerce are to:

- Update the garage to storefront 2.0 plan;
- Incentivize the creation of more experiential spaces/business;
- Develop warehouse zone overlays;
- Allow lockers within neighborhoods (5-minute walking radius) to better serve the consumer, as well as provide better access to secure purchasing and delivery;
- Encourage more efficient transportation of goods and revise loading and delivery restrictions to allow for more flexibility in accessing units; and
- Provide more curb cuts in future sidewalk developments and improvements, and re-envision loading zones.

Conclusion

The class addressed the project goals by performing independent research on the topics of e-commerce and new mobility, and researched existing case studies where these new technologies have already been applied.

Then the students analyzed their respective assigned comprehensive plans for flexible verbiage in the cities' regulations which would make the cities amenable to the technologies moving forward. If the students did not find such verbiage, they made recommendations for new policies that would respond to potential changes.

The adoption of e-commerce and new mobility technologies will have revolutionary impacts on our cities. While the ultimate effects are yet to be determined, cities need to be proactive and do their best to anticipate these coming changes.

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Appendix A

Timeline for Recommendations Regarding New Mobility

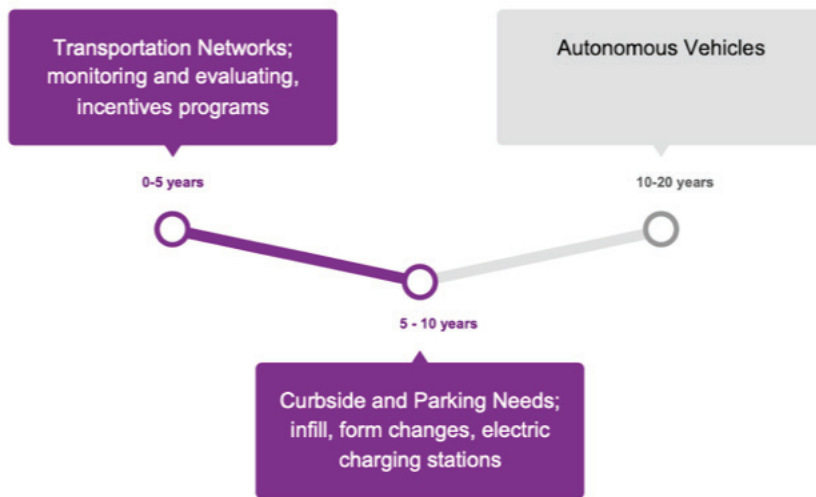


FIG. 12
Timeline of
recommendations
regarding New Mobility

Appendix B

Gresham is more diverse and younger than the state and Portland Metro.

In 2017, while most (66%) of the population identifies as White, 17% identify as Hispanic - 1.5 and 1.3 times the rate of the Metro Portland and Oregon, respectively. Overall, the City's median age of 37.2 is only slightly higher than the state and region. However, those aged 10 to 19 compose 14% of the population - about 20% higher than the state and region (American Community Survey, 2017).

Gresham households earn less income compared to the state and Portland Metro.

Gresham's median household income of \$51,130 in 2017 was nearly \$10,000 and \$20,000 lower than the state and Portland Metro region, respectively (American Community Survey, 2017).

Gresham has a higher percentage of multi-unit structures than the state and Portland Metro.

In 2017, housing in Gresham was characterized by a mix of single-unit (63%) and multi-unit (35%) homes. Its rate of multi-unit structures is 6% and 11% higher than the state and Portland Metro region (American Community Survey, 2017).

The majority of Gresham residents drive alone to work and experience longer commutes than the Portland Metro overall.

In 2017, 72% of Gresham residents drove alone to work. This is typical for the Portland Metro region and state. However, the mean travel time to work for Gresham residents was 32 minutes - nearly 4 minutes longer than average for the Portland Metro region (American Community Survey, 2017).

A slightly higher share of commuters ride public transit in Gresham than the Portland Metro overall.

In 2017, approximately 9% of Gresham residents used public transit to get to work. This is higher than the approximately 6% of residents who do so in the Portland Metro region (American Community Survey, 2017).

Appendix C

Ride-Hailing Service Options in Gresham, Oregon

	SHARED- RIDE	LOW-COST SINGLE PAS- SENGER	LOW-COST LARGE GROUPS	LUXURY	RIDE FOR PERSONS WITH DIS- ABILITIES
Uber	UberPool	UberX	UberXL	Select	Assist
Lyft	Shared	Lyft	LyftXL	LUX	Not Available

FIG. 13
Ride-hailing Service
Options, City of
Gresham, 2019

Appendix D

Policies in Gresham's Comprehensive Plan Applicable to New Mobility

Commercial Land Use Policies	10.312 Commercial Land Use
	<i>Policy 1</i> It is the policy of the City to provide an adequate amount of serviceable commercial land to facilitate the development of commercial centers or infill commercial strip development and prevent the need for lateral expansion of commercial strips along major streets
	<i>Policy 2</i> It is the City's policy to encourage commercial development which increases employment opportunities; reduces dependency on outside-of-city goods and services; promotes energy-efficient travel patterns; is compatible with neighboring land uses; and promotes good community design
	<i>Policy 3</i> It is the City's policy to ensure that the supply of commercially designated land meets the market demand
	<i>Policy 4</i> It is the policy of the City to identify certain properties as potential sites for a future regional shopping center in order to focus appropriate marketing and public facility planning efforts toward these sites. The property known as the "Zimmerman" and "McGill" sites are identified as sites for a future regional shopping center
	10.314 Downtown Plan District - Land Use Policies
<i>Policy 1</i> Provide a mix of land uses that will offer opportunities for people to live, work, shop, play and access cultural and entertainment activities. Downtown will include: a. Significant civic and governmental functions, including parks and the Center for the Arts. b. Office buildings that will provide large numbers of professional sector jobs. c. Medium and high density residential development that will substantially increase Downtown's population d. A shopping district that offers unique goods, entertainment, cultural activities and nightlife	
<i>Policy 2</i> Create a thriving, pedestrian-friendly Downtown core area that will be the heart of Downtown and will have a mix of uses that encourage a variety of activities during at least 18 hours of each day by: a. Being visible and accessible from arterial streets that border Downtown and from the MAX line b. Having commercial areas appropriately sized for Downtown based on market potential and urban design considerations c. Having a uniquely Gresham character and being complementary to the Civic Neighborhood d. Having designated shopping streets (such as Main and Third) where commercial uses are found on the first floor of new buildings	
10.314 Downtown Plan District - Transportation & Connections Policies	
<i>Policy 2</i> Identify a hierarchy of streets, including streets that are to be designed as major pedestrian/bicycle streets and transit routes. Adopt street design standards specific to each street type	
<i>Policy 6</i> Minimize the need for new surface parking by: a. Encouraging new development to locate parking underground. b. Managing on-street parking more efficiently. c. Encouraging shared parking. Consider negotiating with property owners to share private parking lots with the general public during "off-peak" hours when there is surplus parking available. d. Developing an overall parking strategy for the Regional Center that will include addressing the long-term need for structured parking	
10.314 Downtown Plan District - Economic Development Policies	
<i>Policy 4</i> Consider providing financial and technical assistance to property owners and developers to encourage more redevelopment and property improvements	
Residential Land Use Policies	10.314 Downtown Plan District - Downtown Housing Policies
	<i>Policy 1</i> Ensure that Downtown Land Use Districts allow for the medium and high density residential development allowing for a variety of housing types for people of all income levels such that a vibrant city core will be promoted. Allow the highest densities of housing near the Downtown Core, MAX line, and other transit hubs
	10.413.1 Design Standards for Single Family Attached Dwellings
	<i>Policy 1</i> Single family attached dwellings should fit into the context of existing neighborhoods, especially in terms of scale and existing land use patterns; especially important is to create residential neighborhoods with multi-modal transportation connections and opportunities for social interaction
	<i>Policy 6</i> The design of new single family attached dwellings should minimize the impacts of service areas (parking, loading and garbage service) on public streets, residents and existing properties
	10.413.2 Design Standards for Multi-Family Developments
<i>Policy 4</i> Multi-family developments should create residential neighborhoods with multi-modal transportation connections	
<i>Policy 7</i> Multi-family developments should minimize the impacts of parking, loading and garbage service areas on public streets, residents and existing properties	
Office Land Use Policies	10.317 Office Land Use
	<i>Policy 1</i> It is the City's policy to encourage office development especially in downtown and in the vicinity of light rail stations.
Transit-Oriented Development Policies	10.319.1 Transit Corridor Plan Area
	<i>Policy 1</i> The City will permit and encourage land use types and intensities of use which support creation of transit supportive development along the city's transit streets, accommodate forecast growth and are otherwise consistent with the Urban Growth Management Functional Plan and the 2040 Growth Concept Map
	<i>Policy 2</i> The City will seek to create a mix of complementary land uses within easy walking distance of mixed use districts and neighborhoods along the city's transit streets
	10.320 Transportation System
	<i>Policy 1</i> Develop and promote a balanced transportation system that provides a variety of travel options and reduces the need to rely on automobiles
	<i>Policy 3</i> Provide a transportation system that maximizes accessibility to and within regional centers, town centers, transit corridors, station areas, and employment centers
	10.320.3 Bicycle System
	<i>Policy 1</i> Develop a continuous and convenient bicycle network
	10.320.4 Pedestrian System
	<i>Policy 2</i> Improve pedestrian access to transit from residential, commercial, industrial and institutional developments
10.320.5 Transportation Demand Management	
<i>Policy 1</i> Implement transportation demand management programs and strategies that reduce the need for single occupant vehicle (SOV) travel and make walking, bicycling and taking transit more convenient for all trips to and within Gresham	
10.320.7 Parking Management	
<i>Policy 1</i> Manage the on- and off-street parking supply to ensure there is an adequate but not excessive amount of parking available for all land uses	
Growth Management Policies	10.410 Growth Management
	<i>Policy 1</i> It is the policy of the city to promote an orderly growth pattern within its financial capabilities to provide services and facilities while seeking to exercise land use controls in future service areas
	10.330 Public Facilities and Services
	<i>General Policy</i> It is the City's policy that development will coincide with the provision of adequate public facilities and services including access, drainage, water and sewerage services
	10.413.3 Design Standards for Commercial Development in the Corridor Design District
	<i>Policy 3</i> Commercial developments should minimize the impacts of parking, loading and garbage service areas on public streets, residents and adjacent properties
	<i>Policy 6</i> Commercial developments should create sites with multi-modal transportation connections
10.414 Economic Development	
<i>Policy 2</i> It is the city's policy to assure that public facilities are extended in a timely and economic fashion to areas having the greatest economic development potential	
10.416 Community Health and the Built Environment	
<i>Policy 1</i> Encourage the planning and revitalization of communities to achieve improvements in community health by providing opportunities for safe, daily physical activity that includes walkable neighborhoods.	
<i>Policy 4</i> Promote community health by establishing pedestrian and bicycle connections between neighborhoods, centers, corridors, and transportation facilities	

Appendix E

Detailed Recommendations for Gresham

RELEVANT POLICIES	ASSESSMENT	RECOMMENDATION
Residential	The Comprehensive Plan's residential and commercial policies (10.320.7 Parking Management) encourage the conversion of existing parking into alternate uses, yet the policy can be enhanced to anticipate increased demand for residential off-street parking conversions.	Existing policies broadly encourage the conversion of "existing parking" but do not specify any further. We recommend clarifying this policy language by specifically encouraging the conversion of off-street parking (i.e. garages) in single-family residential areas into accessory dwelling units or home offices.
	The City of Gresham's Community Development Code standards and allowed uses should facilitate adaptive-reuse of single-family residential off-street parking.	Consider reviewing home occupation regulations and accessory dwelling requirements and perform an analysis of potential incentives for more workforce housing. All of these could serve to allow for more alternative housing types.
Commercial	Future parking structures developed in Gresham should plan for adaptive re-use, particularly in areas along high-capacity transit.	Revise parking structure Community Development Code standards and allowed uses to ensure flexibility for future adaptive-reuse in commercial districts - particularly in high-transit commercial corridors. Consider designing standards to facilitate conversion into commercial, residential, or e-commerce warehousing uses. Examples of parking structure conversions can be found in Hollywood, California; Boston; Wichita, Kansas; and Cincinnati, Ohio, former multi-story parking garages are being converted to retail and office space, hotels, and apartment buildings (Peters, A., 2019)
Residential & Commercial	The Comprehensive Plan's residential and commercial land use policies do not define or contain language regarding new mobility technologies.	Define "new mobility" as "transportation that is newly enabled by digital technology, primarily through the use of smartphone apps" and incorporate into relevant policies. While many policies may share a nexus with new mobility services, the plan does not directly define or include the language. By including the language, policy interpretation may be strengthened to explicitly consider the implications of new mobility technologies.
	The City of Gresham does not have an ordinance specific to regulating new mobility technology activities. This undermines the City's ability to regulate and proactively manage its adoption.	Develop a permitting process to facilitate and regulate the adoption of new mobility services. Consider designing this process to address the timing, intensity, equity, and spatial components of new mobility technology adoption. Also, consider including including a data reporting clause in any new mobility pilot programs (similar to Portland's e-scooter pilot). The permitting process may use a phased approach to Establish district-specific policies along areas of high-capacity transit routes to optimize new mobility technologies' impact. Consider drafting these policies with the intention of altering Community Development Code exactions to require last-mile/first-mile-type new mobility technologies amenities (e.g. e-scooter or e-bikes docks). This aims to improve transportation network connectivity by increasing the catchment area for public transit ridership and builds upon 10.320.2 Transit System Policy 3, which calls to work with TriMet to provide secure and convenient bicycle parking at light rail station and transit centers. For examples see Washington, D.C., and Fort Lauderdale, Florida, which use Shared Use Mobility (SUM) zones during peak traffic hours so that drivers can safely pull to the side for pick-up and drop-off without blocking traffic or endangering pedestrians or cyclists (Local Government Commission, 2017).
	The Comprehensive Plan's residential and commercial land use policies establish centers and corridors that stress multi-modal connections but do not regulate the location of new mobility technology-related amenities (e.g. docks, charging stations, pick-up/drop-off areas).	Establish district-specific policies in areas outside of high-capacity transit routes to optimize new mobility technologies' impact. Consider drafting these policies with the intention of altering Community Development Code exactions to prioritize the integration of new mobility technology infrastructure into the existing public transit system. Use the strategic adoption of new mobility technologies to bridge
	The Comprehensive Plan's residential and commercial land use policies create auto-dependent development outside centers and corridors.	Further reduce parking ratios for infill development in high-transit capacity areas. Develop incentives to encourage applicants to utilize this policy and reduce off-street parking requirements.
	The Comprehensive Plan addresses and recognizes the need to manage parking, and takes measures to limit excess parking, particularly around transit hubs, in policies found within 10.320.7 Parking Management.	Build upon 10.320.2 Transit System Policy 2's support for "flexible transit services" by coordinating public-private transportation planning to integrate services with other government agencies such as TriMet and ODOT. Conduct a feasibility analysis for the adoption of a Mobility as a Service (MaaS) platform with TriMet.
	Gresham's connections via TriMet MAX to Portland make it poised to implement and provide a Mobility as a Service platform, if desired.	Develop an on-going monitoring program to assess new mobility impacts and trends to evaluate policy effectiveness.
	The adoption of new mobility technologies will occur at different times and impacts will be staggered.	Encourage city staff to engage in new mobility-related educational trainings to stay attuned to trends or bring in a consultant for implementation of certain recommendations.
	As new mobility technologies continue to develop, city staff's training needs to adapt as well.	

FIG. 14

Detailed Recommendations for Gresham to "Future-Proof" its Comprehensive Plan for New Mobility

Appendix F

Disruption to traditional retail	
Update the garage to storefront 2.0 plan.	-Utilize this plan to specifically target adoption of new ecommerce related industries that satisfy existing eligibility criteria
Incentivize the creation of more experiential spaces/business.	-Existing brick and mortar spaces can be reinhabited to support new set of experiential uses -Provide more workforce training programs to train employees losing their jobs due to rise in ecommerce

Disruption to physical environment	
Develop warehouse zone overlays.	-These overlays can locate where it would be appropriate to allow for different scales of storage and distribution facilities (i.e. storage lockers in residential zones. Micro Warehouses in Office residential districts).
Lockers should be located within neighborhoods (5 minute walking radius) to better serve the consumer, as well as provide better access to secure purchasing and delivery.	-This should be done in partnership with private companies to promote pickup from these localized stations rather than door to door delivery.

Disruption to transportation	
Encourage more efficient transportation of goods and revise loading and delivery restrictions to allow for more flexibility in accessing units.	-Alternative delivery modes need to be addressed as well (bicycle, drone, electric vehicles, etc...) and the areas in which these can be allowed to service and during what times of day.
Provide more curb cuts in future sidewalk developments and improvements, and re-envision loading zones.	-More curb cuts will allow for greater connectivity from the street and the sidewalk and make it easier to move goods. -By rethinking the use of loading zones, that space along the street could be more effectively utilized as supportive ecommerce infrastructure.

Density and Location

- 1. Encourage mixed-use zoning that accommodates smaller "hub" size distribution centers.**
Many of the Envision Eugene policies clearly support mixed-use zoning. The City should consider how to ensure further implementation of these policies to support integration of commercial and residential uses.
- 2. Be aware of increased need for on-site package storage and loading and delivery drop-off in residential areas.** As the City of Eugene develops its comprehensive plan, the City should consider policies supporting the need for on-site package storage and loading and delivery drop-off in residential areas, especially those with concentrated multi-family housing.
- 3. Consider integration of residential uses within e-commerce compatible zones.** As a step further in its support of mixed-use zoning, the City should consider integration of residential and e-commerce related uses that match the mid-sized e-commerce distribution centers and hubs.

Commercial Land Use

- 4. Allow for greater code flexibility for commercial zones.** Add Wholesale, Warehousing, and Distribution Center uses to commercial districts, reduce minimum setbacks, increase maximum building heights, and allow for shipping and delivery capabilities.
- 5. Consider Flexible Leases.** Encouraging property owners to offer short-term and flexible leases will allow for more opportunity for pop-up shops, experiential retail, and 'click and connect' Omni channel fulfillment storefronts.
- 6. Provide technical & financial assistance.** Technical training and financial incentives can provide new tools and strategies to encourage local business and entrepreneurs to enter the e-commerce market. eBay's retail revival program is a recent example.¹
- 7. Partner with local small businesses to promote Eugene's existing e-commerce operations and creative uses.** The City should consider facilitating partnerships between local e-commerce

¹ eBay. (2019). eBay's Retail Revival Program. Retrieved from <https://www.ebayinc.com/impact/retail-revival/>

operations and small businesses to encourage information sharing and networking and ensure continued success of both local e-commerce operations and small businesses.

Freight and Street Networks

- 8. Include e-commerce trends in forecasting data to update transportation networks.** Current transportation plans have forecasted data without consideration of e-commerce impacts. Forecasting with e-commerce impacts for future transportation projects can alleviate potential negative externalities (e.g. congestion) associated with new industries.
- 9. Develop performance metrics to gather data on impacts of third party travel and impact of e-commerce.** University of Washington recently launched their Urban Freight Lab in partnership with the city of Seattle and private sector delivery companies to track performance metrics of e-commerce delivery.² Eugene should consider a similar partnership with the University of Oregon. By tracking these metrics, the City can make adjustments in real-time or even anticipate growth resulting from the increase in e-commerce delivery.
- 10. Consider e-commerce parking impacts.** The City should consider how current parking lots and garages can be redeveloped for other uses. While personal vehicle use will continue to support the last mile of delivery from e-commerce centers, overall usage will drop. Additionally, freight impacts should be considered with parking as well to ensure timely loading and delivery. One potential opportunity to consider for freight is to allow access to center at night to alleviate impact not just on parking, but also traffic congestion associated from parking.
- 11. Consider e-commerce sites for the quickest implementation and redevelopment opportunities, especially for first mile, last mile delivery.** Several sites throughout Eugene, both downtown and on the peripheries, are ready to be redeveloped into other viable commercial opportunities. These sites should be considered first before new development occurs.

² Zaleski, A. (2017). *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/>

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