Spring 2019
Eugene

Community Strategies to Improve Accessibility and Sustainable Transportation in Downtown Eugene

Emerson Hoagland and RJ Theofield • Yizhao Yang

Land Use Planning & Policy PPPM 610

UNIVERSITY OF OREGON
Eugene
SCI Sustainable Cities Institute
SCYP Sustainable City Year Program

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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.

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Executive Summary

Located adjacent to the Willamette River and the University of Oregon, downtown Eugene serves as the city's economic and cultural center. The downtown is home to several major employers, seasonal markets, shops, and restaurants that draw visitors in from surrounding areas throughout the week.

The ways in which people travel to and within the downtown have significant environmental, economic, and social implications. Despite the presence of alternative transportation options, single-occupancy vehicles (SOVs) remain a major mode of transportation used to access the downtown. Over the years, this has led to the development of large, costly parking facilities. These conditions are contrary to the City's complementary goals of tripling the share of trips made by walking, biking, and transit and reducing greenhouse gas emissions. Based on current trends, the City of Eugene is concerned that its strategy to manage travel demand may not handle continued growth and will result in parking shortages as more SOVs enter the downtown. For this reason, the city has decided to explore ways to modify its transportation demand management program to promote the city's sustainability values, while also stimulating commercial activity downtown.

In the spring of 2019, the City of Eugene partnered with the University of Oregon's Sustainable City Year Program (SCYP) to research creative policy and programmatic solutions for its downtown transportation challenge. Students enrolled in the University of Oregon's Land Use Planning and Policy course collaborated with City staff to identify and conduct case study research on selected cities. Case study cities from within the United States and internationally were selected based on 1) their reputation for employing innovative strategies to address downtown accessibility and mobility issues; and 2) their comparability with the city of Eugene. In total, seven cities were studied.

For each case study, a content analysis of relevant plans and policy documents was performed to identify transportation strategies based on three focus areas: 1) sustainable transportation; 2) travel demand management; and 3) parking management. Based on the findings from this analysis, students proposed the following recommendations:

1. SUSTAINABLE TRANSPORTATION RECOMMENDATIONS

Planning for Sustainable Transportation

- Set measurable objectives, monitor, and track progress.
- Incorporate a hierarchy of transportation and mobility priorities for downtown.

Expand Availability

- Establish frequent transit networks and areas.
- Expand level of service (LOS) standards to include multimodal transportation networks.
- Improve bike-share accessibility.

- Legalize skateboarding within the downtown.

Enhance the Experience

- Fund new mobility research grants.
- Implement pavement-to-plazas and parklets.
- Improve listed accessibility standards of the bicycle and pedestrian networks.
- Develop a neighborhood access tool in partnership with Lane Transit District and integrate it into planning initiatives.
- Integrate more flexibility into the City's strategy.
- Implement curbless streets.
- Integrate a standardized wayfinding system within Eugene.
- Incorporate pedestrian through-block walkways within the downtown.

2. TRANSPORTATION DEMAND MANAGEMENT RECOMMENDATIONS

- Use TDM calculators and other measures to analyze return on investment as well as public health impacts.
- Coordinate TDM efforts with the City of Springfield.
- Develop an employee trip reduction plan for organizations.
- Enhance partnerships with local universities.
- Develop a community-wide Eco Pass program in partnership with Lane Transit District.

3. PARKING MANAGEMENT

RECOMMENDATIONS

Disincentivizing Parking usage

- Implement performance-based parking.

Maximizing the Efficiency of Parking

- Implement an app-based parking management program like goBerkeley.
- Adopt the Sustainable Urban Mobility Plan (SUMP) principles to guide parking management.
- Implement aspects of Bellingham's Smart Growth Model.

Minimizing the Impact of Parking

- Utilize public parking facilities management and activation.
- Minimize parking curb space usage.

Introduction

Cities across the world are faced with issues of sustainability and accessibility and have begun to set ambitious goals to transform how they operate. As a result, many now recognize the reality that continuing the status quo by accommodating most travel by private automobile, and advancing sustainability are incompatible goals.

In this new paradigm, the solution to a lack of parking in the downtown can no longer be to build another parking garage because of the now acknowledged negative air quality, greenhouse gas emissions, and equity implications of doing so. In response, cities have developed new and innovative strategies, enabled by advances in technology, to address such transportation issues. Broadly, these bold strategies intend to help cities meet their goals by increasing the share of trips made by walking, biking, and public transportation. While simple at first glance, achieving this goal requires a new set of transformative sustainable transportation, travel demand management, and parking management policies and programs. Today, the city of Eugene finds itself pressed with a shortage of downtown parking and the goal of tripling the share of trips made by walking, biking and transit, as well as greenhouse gas emission reduction targets. In recognition of the implications of its transportation policy on the vitality of its downtown, the City of Eugene partnered with SCYP to learn from others and apply creative policy and programmatic solutions to address this challenge.

The purpose of this report is to assist the City of Eugene, Oregon by examining the approaches of exemplary domestic and international cities to address accessibility and mobility issues in its downtown and offer policy and program recommendations. Further, this policy report aims to offer the City innovative ideas for how to make downtown Eugene more accessible to people traveling by non-automobile means, encouraging residents, employees, and visitors to use public transit, and, ultimately, enhance the City's capacity to manage downtown mobility. To achieve this, an extensive content analysis of seven cities' sustainable transportation strategies was conducted. From this research, key findings and recommendations for policy alterations and interventions were generated for the City of Eugene.

Methodology

The case study cities were selected for this report based on their comparability with the city of Eugene and its strategies toward addressing accessibility and mobility issues in its downtown area.

To conduct the case study, relevant plans and policy documents were selected from both jurisdictions that frame each downtown policy management context. A list of relevant plans and policy documents reviewed for each case study is located in Appendix A.

Next, we performed a content analysis for references to accessibility and sustainable transportation policy tools and approaches that target downtown. We started the process with an extensive list, which we further categorized and coded into three sub-focus areas: 1) parking management; 2) sustainable transportation; and 3) transportation demand management. The remainder of each case study is organized into sections that describe the community context, provide a summary of policy tools, and highlight policy tools and approaches that are applicable to Eugene. We then developed policy tool highlights and concluded our analysis with recommendations to be considered by the City of Eugene.

Case Studies

This section provides an overview of the findings from a review of plans, policies, and programs for each of the seven case studies cities: Berkeley, California; Vancouver, British Columbia, Victoria, British Columbia; Arlington, Virginia; Boulder, Colorado; Seattle, Washington; and Bellingham, Washington. The findings are organized into three categories: (1) sustainable transportation, (2) travel demand management, and (3) parking management.

Berkeley, California

The city of Berkeley is in Alameda County in northern California, situated east of San Francisco. The city covers a land area of 10.5 square miles and is bordered to the north by the city of Albany and to the south by the cities of Oakland and Emeryville.[1]

Its total population is approximately 120,176, which includes an estimated student population of 34,800.[2, 3] Berkeley is the fourth largest-populated city in Alameda County.

The downtown area is centrally located, adjacent to the University of California, Berkeley. Downtown Berkeley is bounded to the north by Hearst Avenue, Oxford-Fulton Streets to the east, Dwight Way to the south, and Martin Luther King Jr. Way to the west (Figure 1). The *Berkeley Downtown Area Plan* expands the downtown area to include lower density residential areas. The expansion is in addition to major commercial and transportation corridors served by the Bay Area Rapid Transit (BART) system.[4]

This central area is a hub of mixed-use commercial activity, with retail, restaurants, and offices readily coexisting with residential units (Figure 2).[5] However, downtown Berkeley is also a major cultural and institutional anchor for the surrounding city. Described as an "arts district," downtown is home to a variety of theatres, music venues, cinemas, and museums that provide visitors and

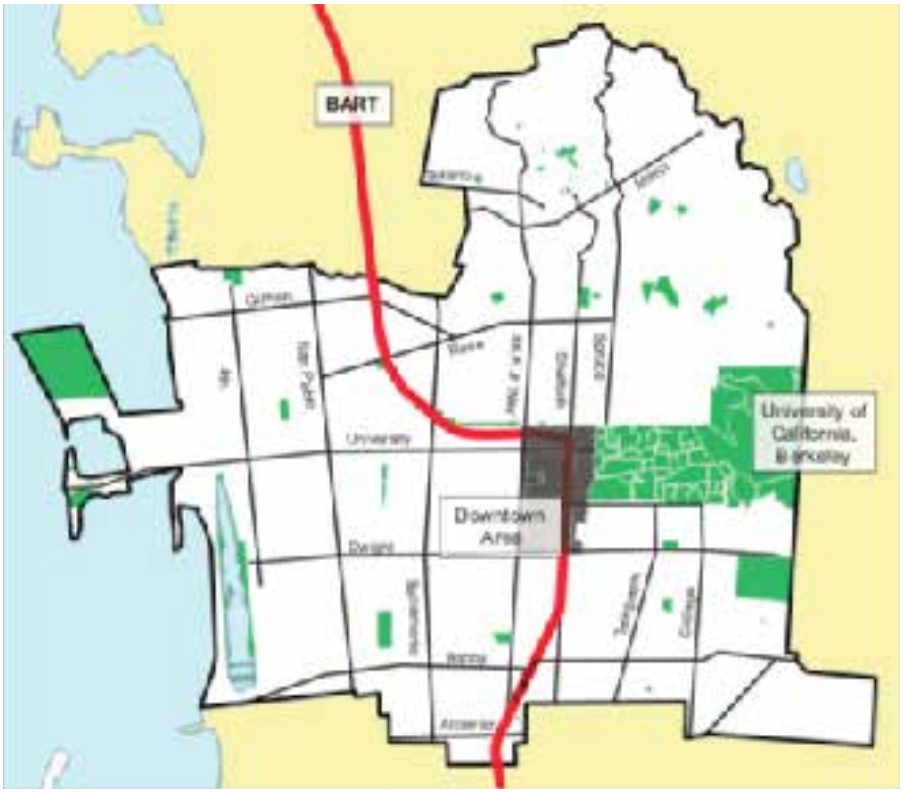


FIG. 1

Map of Berkeley, California

Source: Downtown Area Plan. Berkeley, CA: Department of Planning & Development, 2012.

FIG. 2

Map of Downtown Berkeley

Source: Downtown Berkeley Association

residents with enriching experiences.[6] City government, the University of Berkeley, California Department of Health and Human Services, and other educational and civic organizations also have a strong presence in and around the downtown area.

Downtown Berkeley is a regional transportation hub and is one of the area's major city centers. The downtown area provides the second largest transit node in the East Bay; more than 40,000 daily transit trips begin, end, and connect through downtown Berkeley.[7] In addition to BART, the downtown area is served by bus lines operated by local transit provider, AC Transit, as well as several commuter-based shuttles operated by UC Berkeley and others. Berkeley is also a part of a regional e-bike sharing system called Ford GoBike that allows for short, one-way trips by bike; there are 38 stations and 400 bikes docked within the city of Berkeley.

Alternative transportation modes in addition to transit resources and the downtown's physical attributes have led downtown Berkeley to serve as a regional employment center and destination. In general, transit, walking, and biking comprise the dominant transportation modes for a majority of those who live, work, or visit downtown Berkeley.[8] For example, of those who commute to work downtown, approximately 51 percent arrive by foot or bicycle, 24 percent use public transportation, and 24 percent drive (Figure 3).[9] These transit patterns stand in contrast to Berkeley city-wide commuters: 30 percent walk or bike, 25 percent use public transportation, and 44 percent drive.[10] The large proportion of downtown commuters that choose alternative modes of transportation over SOVs may indicate that policies and programs in place do have an effect on travel behavior.

POLICY TOOLS AND APPROACHES

This section provides an overview of the relevant plans and policy documents that were reviewed as part of Berkeley's downtown policy and management context to gain an understanding of Berkeley's approach to transportation. The overview covers each relevant plan and policy document and includes purposes and goals, as well as a summary of applicable accessibility and sustainable transportation-related policy tools and approaches

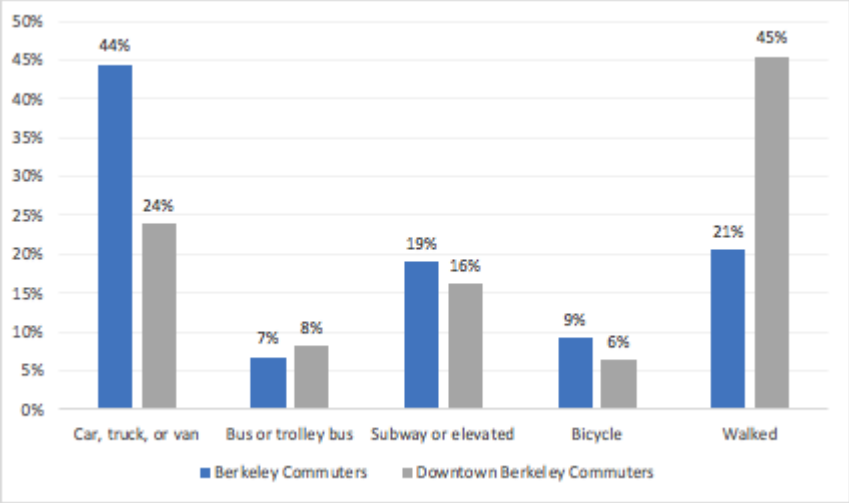


FIG. 3

Means of Transportation to Work, Berkeley, CA, 2014–2017

Source: U.S. Census Bureau / American Factfinder. "B08301: Means of Transportation to Work."

as determined through the content analysis.

Berkeley General Plan

The Transportation Element of the *Berkeley General Plan* serves as Berkeley's comprehensive transportation policy framework. The Transportation Element draws upon district plans, bicycle and pedestrian strategies, as well as a Transportation Demand Management (TDM) studies in order to establish "policies for the movement of people, goods, and vehicles through the city."[11] A major objective of the Transportation Element is to:

> "Reduce automobile use and VMT in Berkeley, and the related impacts, by providing and advocating for transportation alternatives and subsidies that facilitate voluntary decisions to drive less."[12]

Berkeley General Plan Policies

T-3 Eco-Pass City Program
T-10 Trip Reduction
T-11 City of Berkeley
T-12 Education and Enforcement
T-13 Major Public Institutions
T-14 Private Employers
T-34 Downtown Parking Management
T-36 Satellite Parking Facilities

Berkeley Downtown Area Plan

The *Berkeley Downtown Area Plan (Downtown Area Plan)* provides a vision for the downtown area. The *Downtown Area Plan* adds action-oriented provisions to the strengths that resulted from nearly 20 years of prior downtown area planning.[13] Major considerations of the Plan include environmental sustainability, accommodation of residential and employment growth, and provision of a pedestrian-friendly and transit-oriented district. Other highlights include various Parking and Transportation Demand Management programs that encourage transportation alternatives and effective parking. In addition, the *Downtown Area Plan* sets a framework for new zoning standards to facilitate an urban mixed-use city center.

Berkeley Downtown Area Plan Policies

Access – 1.2 Single-Occupant Vehicles
Access – 1.3 Alternative Modes & TDM
Access – 2.1 Pedestrian Safety & Amenities
Access – 3.1 Effective Parking
Access – 3.2 New Parking
Access – 4.1 Transit Priority
Access – 4.2 Attractive Transit
Access – 4.4 Transit and Bikes
Access – 4.8 Transit-Supportive Uses
Access – 5.1 Bike Network Improvements
Access – 5.2 Bicycle Parking
Access – 5.3 Bike Sharing
Access – 5.4 Business & Institutional Support

Berkeley Climate Action Plan

The *Climate Action Plan* is the result of an approved 2006 ballot measure, Measure G, that called for setting a goal of 80 percent reduction in greenhouse gas emissions by 2050.[14] To meet the goal, the mayor was advised to work with the community to develop an action plan that was later adopted in 2009. "Chapter 3: Sustainable Transportation and Land Use" serves as a policy guide toward reducing VMT and increasing fuel efficiency and usage of low-carbon fuels.

Berkeley Climate Action Plan Policies

TLU – 1A Transit-Oriented Development
TLU – 3A Parking Strategies
TLU – 4A TDM Revenue
TLU – 5A Bicycle & Pedestrian Infrastructure
TLU – 5B Marketing & Promotion

TLU – 5C Transit Bicycle Access
TLU – 5D Municipal Operations
TLU – 6A Transit Enhancement
TLU – 7A Car Sharing
TLU – 7B Ridesharing
TLU – 9A Outreach and Education
TLU – 10B Alternative Transportation

Berkeley Streets and Open Space Improvement Plan

The *Streets and Open Space Improvement Plan* (SOSIP) implements the policies of the *General Plan*, *Downtown Area Plan*, and *Climate Action Plan*. In particular, the SOSIP provides designs and guidelines for public realm improvements to the downtown area. The downtown public realm– parks, plazas, and streets– accounts for 40 percent of the downtown area. As such, designs and guidelines help to streamline the implementation and development process. Even more, the SOSIP sets project priorities that are accompanied by financing strategies to ensure projects are funded.

Berkeley Streets and Open Space Improvement Plan Policies

1.12 Transit Performance
1.13 Attractive Transit
1.18 Net-Zero Parking Strategy
1.19 Transit & Parking
3.2 Bicycle Parking
3.3 Bike Sharing

POLICY HIGHLIGHTS

This section builds on the overview of policy tools and approaches by describing current and relevant policy and program highlights for the three sub focus areas of the case study. The three-sub focus include: 1) sustainable transportation, 2) parking management, and 3) transportation demand management.

1) Sustainable Transportation

The purpose of sustainable transportation is to increase travel by sustainable, alternative modes. Actionable items related to sustainable transportation and mobility management may include expanding the availability of alternative modes of transportation or enhancing user experiences for alternative modes of transportation. Highlights of Berkeley's policies and programs are strategies for bicycle access, facilities, and infrastructure, and land use and development.

Bike Access, Facilities & Infrastructure

Throughout the reviewed plans, there is a common theme of investing in and expanding bike access, facilities, and infrastructure. The City's approach comes from a perspective that the easier and more convenient it is to use alternative transportation modes, the greater the likelihood that more people will utilize such modes. This equates to streets that offer designated bicycle lanes, facilities, and proper lighting for "all hours" use.[15] Bicycle Boulevards are one example of Berkeley's approach to giving priority to bicyclists through local traffic by providing bicycle routes on low-speed, low-volume streets (Figure 4).[16] The city's Bicycle Boulevard Design Tools and Guidelines provide more context to the city's design and implementation process for Bicycle Boulevards.

In addition, policies are in place to ensure adequate bicycle parking in areas convenient for commuters and visitors. For example, the new Center Street Garage in downtown Berkeley includes eight levels of public parking with a first-floor dedicated to the Berkeley Bike Station that offers commuters and visitors safe and convenient bike parking near BART and

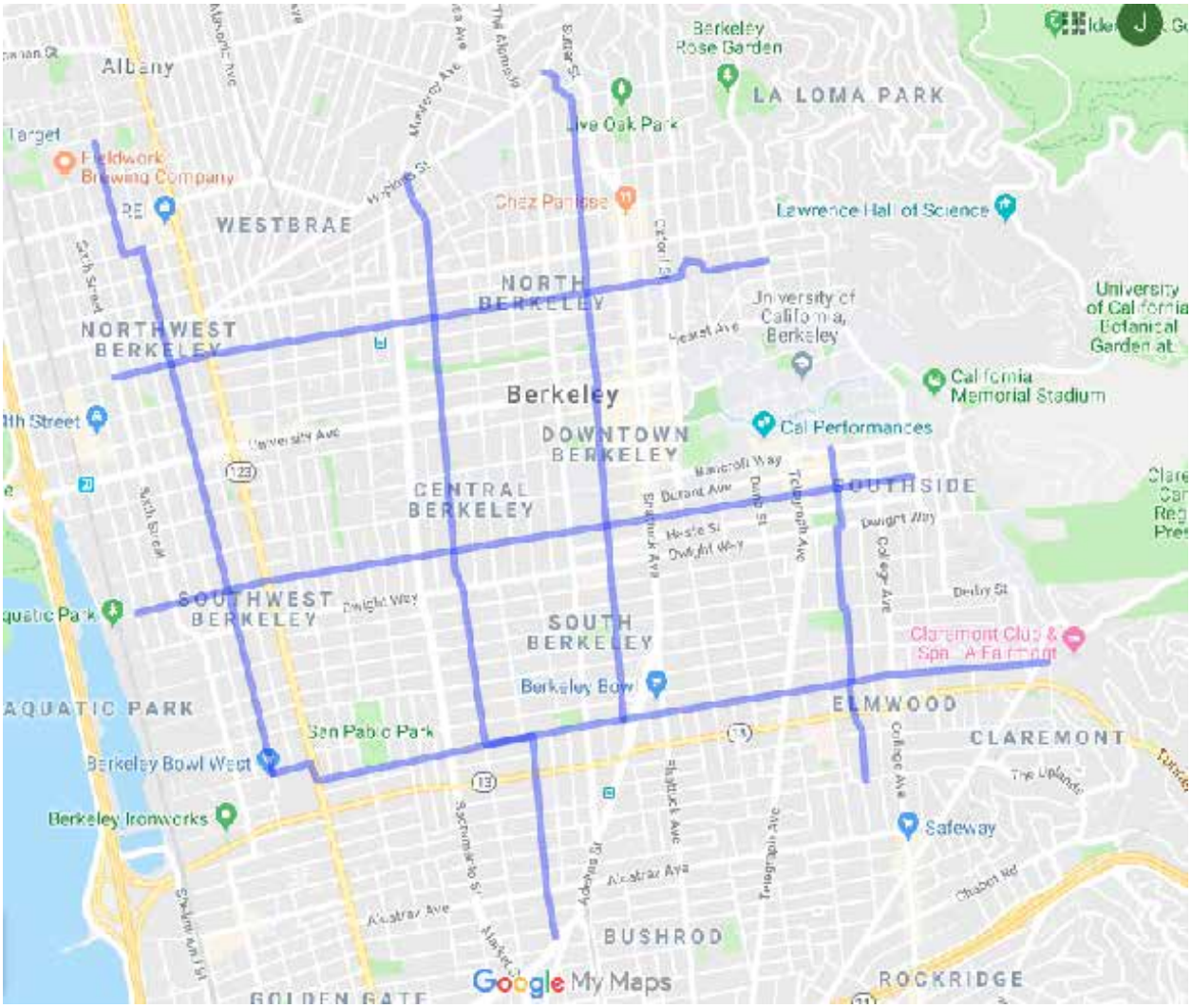


FIG. 4
Berkeley's Bicycle Boulevard Network
Source: Google Maps, Berkeley Bicycle Boulevard Network Map

local transit (Figures 5, 6). The Bike Station has secured, on-demand self-parking available for up to 54 bikes, 24 hours a day through BikeLink. The Bike Station also offers no-cost bike valet for 300 bikes in addition to bike rentals, repairs, and sales during staffed hours from 7 am to 8 pm, Monday through Friday.

Lastly, the City of Berkeley offers opportunities for the conversion of on-street parking to bicycle parking in select locations. This can be done through bike corrals, or "on-street high capacity bike parking" used when there is higher demand for bicycle parking than what can be accommodated on sidewalks.[17] This is typically in commercial districts. Corrals can accommodate four to five bicycle racks, parking eight to 10 bicycles (Figures 7, 8). Businesses or property owners can submit a Bike Corral Application Maintenance Agreement for a free corral through the City's Public Works Department.

Transit-Supportive Improvements

The *Downtown Area Plan*'s Policy AC-4.1 seeks to make transit more desirable

FIG. 5

Berkeley Bike Station in Center Street Garage 1

Source: BART, Berkeley Bike Station

FIG. 6

Berkeley Bike Station in Center Street Garage 2

Source: BART, Berkeley Bike Station

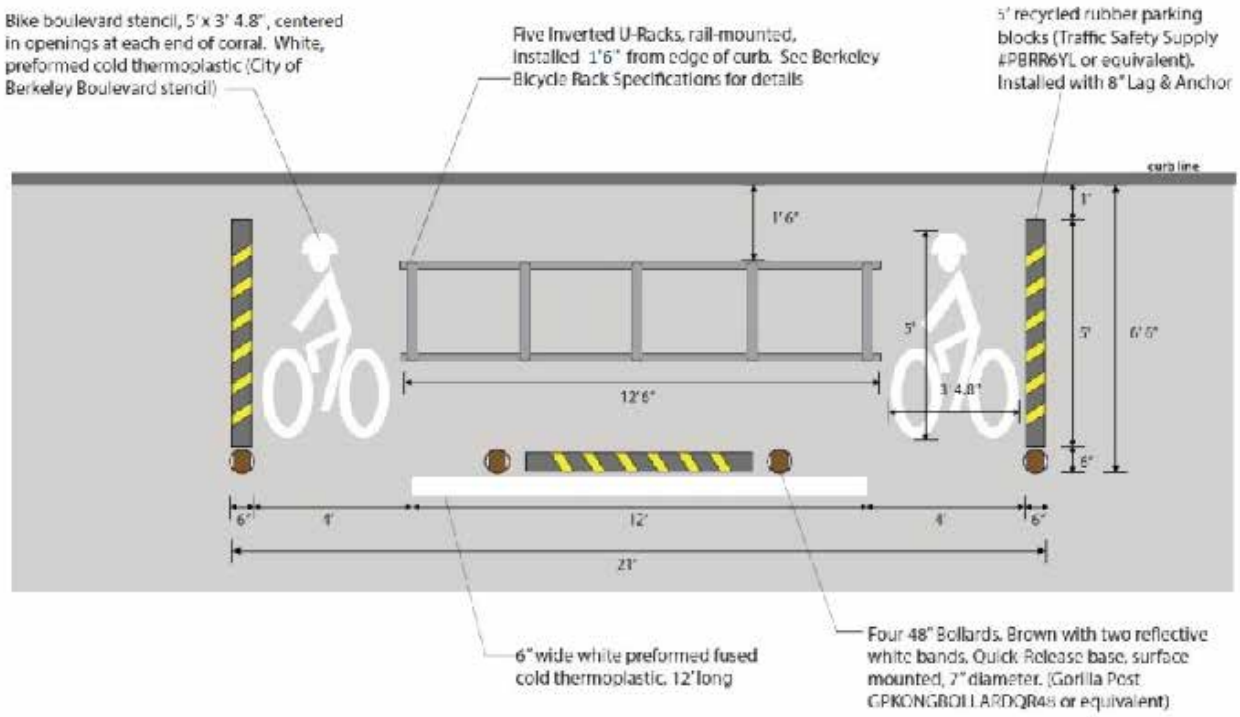


FIG. 7

Bicycle corral design

Source: City of Berkeley, Bicycle Corrals

FIG. 8

Bicycle corral photograph

Source: City of Berkeley, Bicycle Corrals

FIG. 9
BART Plaza, Downtown Berkeley
Source: BART

for potential users through transit-supportive improvements. Worth noting here is the policy to encourage "AC Transit, BART, and other transit providers to increase evening service to Downtown…work with these providers to improve nighttime conditions near transit stops that affect safety, such as lighting and visual access."[18] These improvements make transit more attractive to those who might otherwise feel uncomfortable riding after dark and are also part of a strategy to work in conjunction with entertainment and cultural destinations downtown to draw people onto transit.

The 2018 BART Plaza opening is a recent example of a transit-supportive improvement. Planning and design efforts began in 2006 to "enhance multimodal transit access to expand ridership, increase accessibility for pedestrians and bicyclists, reorganize the public space to better accommodate transit users and…to reflect the identity of the community and history of Downtown Berkeley."[19] The $13 million renovation was completed in October 2018 and features a glass entrance, sound and light system for performances and soundscapes, and public art.[20]

The opening of BART Plaza was accompanied by the Downtown Berkeley Plaza Activation Plan, developed by the Downtown Berkeley Association (DBA), City of Berkeley, and Civic Arts Commission. The Plan details various components to ensure that the Plaza is consistently activated. Activation components include a Berkeley LIVE! Temporary stage and programming managed by DBA, welcome kiosk, sidewalk seating managed by nearby merchants, bistro tables and chairs managed by DBA, and two nonprofit food vendors (Figure 9).

Land Use and Development

In addition to the sustainable transit systems, it is imperative that the

broader urban context be understood to maximize the impact of bike and transit policies. Berkeley's *Climate Action Plan* stresses the importance of developing housing, commercial, and employment clusters around transit centers. Policy LU-23 requires "greater commercial and residential density and reduced residential parking requirements in areas with above-average transit service such as downtown Berkeley."[21] Implementation actions include zoning for higher densities, establishing parking maximums and building height minimums, and requiring new developments be built in a way that facilitates alternative modes of transportation.

2) Parking Management

Parking management is typically a set of policies, programs, and actions that seek to control parking demand and ultimately result in more efficient use of parking resources.[22] Improved management is critical to solving parking problems. In response to parking issues, Berkeley's plans and policies outline parking strategies, including metering, pricing, and implementation of policies to discourage car travel and thereby parking.[23]

Public Parking Facilities

To prioritize alternatives to driving, the City controls public parking pricing and policies. Policy T-34 of the *General Plan* requires management of "the supply of Downtown and Southside public parking to discourage long-term all-day parking and increase the availability and visibility of short-term parking for local businesses."[24] Actions include: low-cost parking for carpool and vanpools,

FIG. 10

Downtown Berkeley Plaza Activation Plan Map

Source: Downtown Berkeley Plaza Action Plan

employee parking limitations, and working with other entities to manage parking demand and resources. The objective is to create an environment where it is easier and cheaper to take alternative transportation modes.

The Center Street Garage is an example of the city's efforts to modernize parking facilities to accommodate car parking, civic spaces, and accessibility for alternative modes of transportation. In addition to its bike facilities and services, Center Street Garage provides 720 parking spaces, 20 electric-vehicle charging stations, a public art area, and a coffee shop/retail space.[25] An additional amenity coming to the garage is the ability to make an advanced parking reservation through the LAZgo widget. Parking passes are to be available by phone in order to enter the garage.

Unbundling Parking

Another parking management approach worth mentioning is the "unbundling" of parking prices from housing costs. Ultimately, unbundling can change consumers' cost calculation of parking and housing, which may result in greater use of alternative modes of transportation. The *Climate Action Plan* Policy TLU-3A stipulates that "parking spaces require separate payment and are not included in the rent or purchase price of a unit" with the intention being that those "who choose to live car-free should not be burdened with the cost of a parking space they do not need. And those that do require a car should be made aware of the full costs associated with owning it."[26]

Net-Zero Parking Management

The SOSIP's Policy 1.18 calls for a net-zero parking management strategy where "the price of on-street parking would be raised in locations of high demand to motivate some motorists to park in garages or in on-street locations" so as to stabilize parking demand in light of downtown improvements.[27] While this does not actively seek to limit car parking, it does creates a mechanism to compensate for loss of parking. This in turn may encourage greater development with a focus on alternative transportation.

goBerkeley

goBerkeley is an example of a program that adheres to the net-zero parking management strategy. goBerkeley is the City's parking management program for commercial districts, including downtown. The program is data-driven and demand-responsive with the purpose to "improve the safety and ease of travel in metered parking" by adjusting rates and time limits in real time to meet local needs.[28] Parking rates and time limits are raised or lowered in real time to reach one to two open parking spaces per block in order to ensure that there is consistent availability of parking (Figure 10). Consistent and flexible parking reduces the time drivers spend circling for a spot, while also facilitating natural turnover. City staff work with local businesses to determine specific time limits that will work with customers and visitors of that area. In addition, goBerkeley areas have clear and direct signage with parking instructions as to not contribute to sidewalk clutter.

3) Transportation Demand Management

Transportation demand management (TDM) provides a system to control demand for single-occupancy automobile travel, shifting travel to alternative modes of transportation (e.g. transit, ride-share, bicycle, or pedestrian travel), while also informing

FIG. 11
goBerkeley pricing
Source: goBerkeley

users of the social and environmental costs associated with automobile travel through information sharing, education, and marketing. Transportation demand management thereby offers a systematic means by which to incentivize changes to travel behavior in order to reduce greenhouse gas emissions and decrease vehicle miles traveled.

EcoPass Program

Berkeley's TDM approach for the downtown area primarily focuses on reducing the number of commuters that drive and park downtown. The 'EcoPass' program detailed in the *General Plan* and *Climate Action Plan* aims to "reduce automobile traffic and congestion" in downtown by providing free, unlimited rides on all AC Transit buses to employees and/or students of participating Berkeley employers and institutions.[29] There are enrollment options for employees, students, and residential community groups.

The program is available to residential communities with more than 100 units; in some cases, participation can be extended to infill development projects with 50-99 units if located on a transit service corridor.[30] Property owners or managers can "opt in" to provide residents with free or low-cost access

to transit.[31] Each residential unit is entitled to one free EcoPass, with the option to purchase additional passes for other verifiable residents. At the construction phase, developers can integrate transit subsidies into the development and operational plans. This can lead to a reduction in required parking by the City, which can lower construction costs for the developer. Owners or developers of more than one multi-family residential property can also combine properties into one EcoPass program.

City of Berkeley TDM Program

In the *General Plan*, Policy T-11 seeks to make the City of Berkeley a "model employer" to decrease trips and emissions from single-occupancy vehicles. Actions under this policy include: eliminating "free or low-cost parking provisions from employee individual and union contracts... establish employee automobile use reduction goals" and the use of "market pricing mechanisms to discourage all-day parking in City garages."[32] In addition to these actions, the City employs several efforts that span bicycle, carpool, vanpool, and car-sharing programs for employees. For example, the City provides secure bicycle parking at city hall and shower facilities in conjunction with the nearby YMCA. Additionally, the City offers a bicycle fleet with 10 bicycles for use during the workday. City employees have the following rideshare options:[33]

- Discounted carpool and vanpool parking;
- Discounted parking at City facilities for carpools and vanpools with 3+ riders;
- Guaranteed Ride Home program through Alameda County;
- Ridematching service through 511; and
- City CarShare fleet vehicles.

Commuter Check Program

Several city policies call for single-occupancy vehicle trip reduction by working collaboratively with employers and institutions to adopt TDM programs that offer incentives and benefits to use alternative transportation modes.[34] The Commuter Check Program offers a strong example of a collaborative TDM program. At the regional level, San Francisco Bay Area employers with 50 or more employees are required to provide employees with a "commuter benefit program" that includes transit subsidies and benefits to encourage the use of public transportation.[35] Berkeley-based businesses are subject to greater regulations through the City's Tax Relief Action to Cut Commuter Carbon program, bringing the program requirement of 50 or more employees down to 10 or more employees.36

Benefits are to include one or more of the following:[37]

- Pre-tax transit/vanpool plan: Employees can use up to $125/month in pre-tax wages for transit or vanpool expenses (Federal Tax Law 132(f)).

- Employer Paid Transit/Vanpool/Bicycle Benefits: Employees can receive benefits that pay for transit, vanpool, or bicycle expenses related to commutes. The bicycle benefit can only be provided as an employer-paid benefit; thus, employees must choose between a transit and bicycle benefit.

- Employer Provided Transit: Employees receive free shuttle service provided and funded by

the employer between home and workplace.

Parking Cash-Out Program

California state law requires eligible employers that provide subsidized employee parking to participate in the "cash-out" program through which employees are offered a cash subsidy in lieu of parking.[38] The purpose is to reduce VMT and greenhouse gas emissions by incentivizing employees to take alternative modes of transportation to work. Policy T-34 of Berkeley's *Climate Action Plan* directly references this program. Because the program is state mandated, the City's role is to ensure the policy is enforced. However, the program also offers an opportunity to align incentives for car or vanpooling in what can be assumed are open parking spaces at worksites.

Bike-Share Reduced Fare Program

A reduced fare program for Ford GoBike bike-share ensures that bike-share is accessible to all income levels. Through Ford GoBike's Bike-Share for All program, one-time $5 annual membership is available to adults who are eligible for certain discount programs through utility and transit agencies. Memberships can be purchased online, or in-person at the Downtown Berkeley Bike Station.[39] UC Berkeley students can also participate in the month-to-month program for $13/month; further discounts are available to students in the Educational Opportunity Program.[40]

Vancouver, British Columbia

Vancouver is a seaport city on the west coast of British Columbia, approximately 50 miles north of the US/Canada border. The city covers approximately 44 square miles on the western half of the Burrard Peninsula, bounded to the north by English Bay and the Burrard Inlet and to the south by the Fraser River.

It is home to the University of British Columbia, a public research institute and a top school in the region.[41]

According to the 2016 census, the population of Vancouver is 631,486, with over 2 million residents in the greater metro area.[42] It is the largest city in BC and the eighth largest municipality in Canada. Further, Vancouver is growing: between 2011 and 2016, the population in the greater metro area rose 6.5 percent, and it is expected to continue growing by approximately 35,000 residents each year. However, the population is also aging, which is expected to have significant impacts on regional transportation.[43]

The city is consistently ranked among the top 10 most livable cities according to the EIU's Global Liveability Ranking and is among the cities leading the way in terms of innovative approaches to environmentally progressive transportation and city planning.[44] In 2009, the city engaged with global climate experts to draft the Greenest City Action Plan, which established goals and targets that would make Vancouver the greenest city in the world.[45] Thus, although Vancouver is a much larger city than Eugene, it offers aspirational strategies that can guide long-term growth and sustainability in Eugene's downtown area.

Transportation in Vancouver is organized and operated by Metro Vancouver's transit authority, TransLink. TransLink oversees public transportation and all transit-related infrastructure in the area, providing service via major road networks, bicycle and walking networks, bus, light rail, train, and water taxi. TransLink is funded through taxes and fees. it is overseen by the Mayor's Council, which is in charge of appointing its three-member Board of Directors. The Mayor's Council reviews and approves all TransLink plans and does so in direct coordination with all other Metro Vancouver planning efforts.

Vancouver's downtown peninsula and the adjacent Eastside neighborhood are prioritized as areas for development in the Metro BC regional transportation strategy adopted by TransLink in 2013.[46] This regional investment in this area is augmented by municipal projects and programs and guided by several planning documents.

In regard to transportation planning, the City's current goals and strategies have developed out of the 1995 CityPlan.[47] CityPlan was the product of a year-long outreach campaign in which over 20,000 people participated in the planning process. The outcome was a vision for the City that prioritized neighborhood planning. In 2014, the Downtown/Eastside neighborhood plan was one of the first completed through the process set out by CityPlan.[48] The Downtown/Eastside plan is consistent

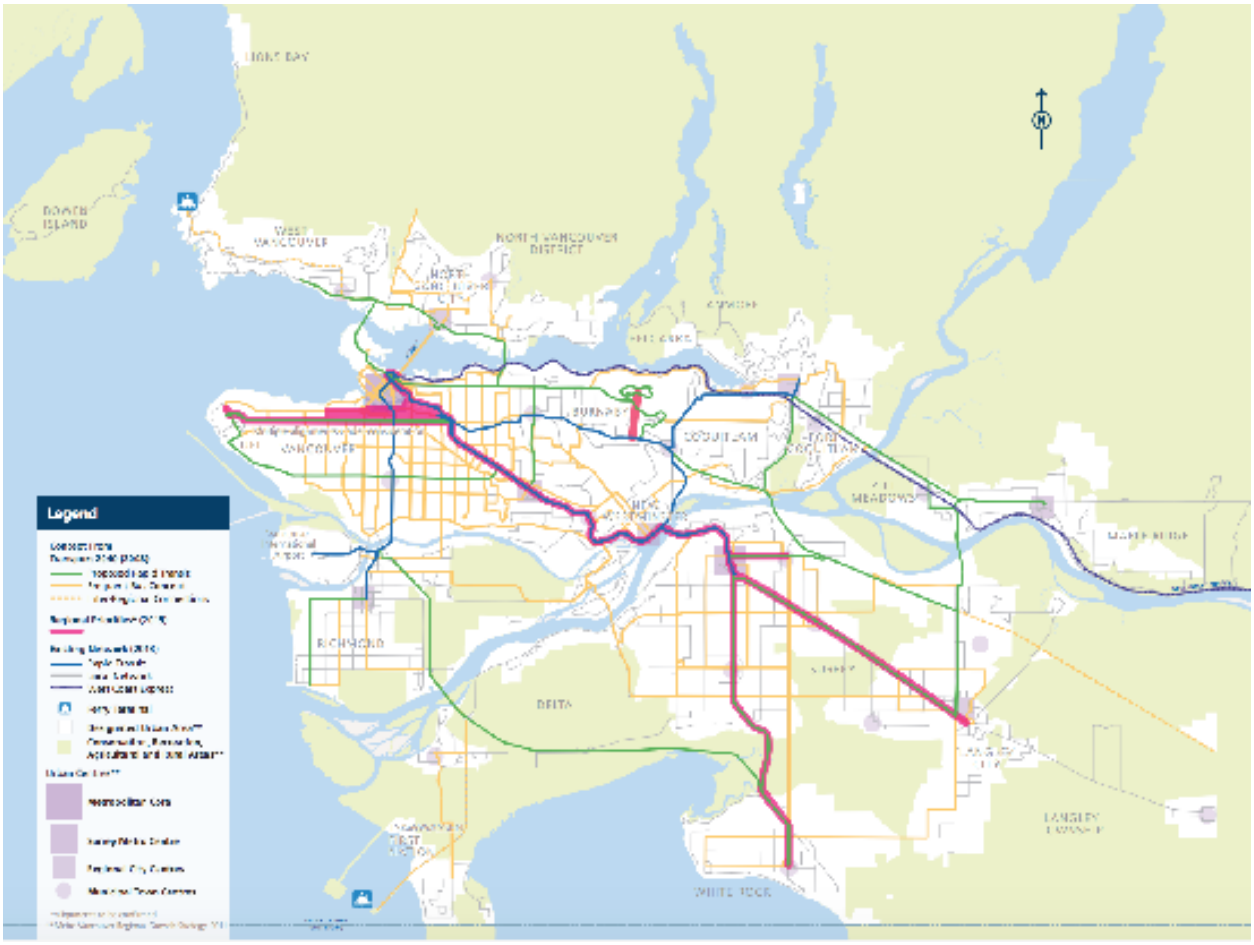


FIG. 12
Regional Transit Network

with city-wide goals laid out in the Transportation 2040 plan adopted by the Vancouver City Council in 2012, which include: 1) making the majority of trips on foot, bike, and transit; 2) eliminating dependence on fossil fuels; and 3) breathing the cleanest air of any major city in the world.

Within the context of these larger goals, the Downtown/Eastside neighborhood leads the city in walkability with 65 percent of residents walking, biking, or taking transit to work—24 percent more than the overall city average. The policies adopted in the Downtown/Eastside plan focus on strategic "spot improvements" to improve walking and biking infrastructure and connect the area's ports, railway stations, and arterial routes.

In terms of parking concerns, Vancouver's downtown area faces different challenges than Eugene. Trips by car into the downtown area are decreasing, and thus, the need for parking is also decreasing. The City has adopted a holistic view of parking that accounts for all parking in the area, not just public parking, and allows for leasing and permitting that assures all parking assets are put to full use. Through these initiatives, the City has reduced the need for parking in the area, which has allowed for the implementation of the "Pavement-to-Plaza" program, which encourages the development of off-street parking spaces into small "parklets" that improve the pedestrian environment. This program aims to reduce parking availability in stride with decreasing need.

Because Eugene's downtown area is not yet experiencing a similar decline in parking demand, these more recent parking programs adopted in Vancouver are perhaps less applicable at this point than those programs and policies directed at managing travel demand and developing/incentivizing sustainable transportation options.

In summary, Vancouver and Eugene present very different planning contexts in terms of size, population, and transportation assets. Vancouver residents have access to the SkyTrain rapid transit system and a more extensive network of shipping ports and regional transportation options. However, the City's commitment to green neighborhood planning initiatives provides a useful model of success, and their wide array of strategies offer several that can be directly applied to the Eugene context.

In this report, Vancouver's strategies have been split into two sections: Policy Strategies and Program Strategies. These two categories work together to accomplish the City's goals, and our recommendations take both approaches into consideration.

POLICY STRATEGIES

The policy strategies that inform Vancouver's transportation planning as it relates to parking management, sustainable transportation, and transportation demand management are outlined in the following documents:

Metro Vancouver 2040 Regional Growth Strategy

The Regional Growth Strategy provides a framework for development through five goals for growth in the Metro Vancouver jurisdiction that work to strategically influence land use in areas that are serviced by TransLink. To do this, the City promotes corridors and nodes of development with the intent of reducing vehicle use, providing more and better alternative modes of transportation, and reducing energy use and environmental impact. This strategy is made possible through a joint effort between TransLink and Metro Vancouver that creates shared goals and policies to guide sustainable development. The strategy also outlines metrics for performance monitoring that are based on changes in land use, greenhouse gas production, and the amount of housing and employment opportunities and their proximity to transportation networks.[49]

Vancouver's *Transportation 2040 Plan* is the main guiding document for all transportation planning for the city. This strategic plan has a number of overarching goals aimed at increasing the use of sustainable modes of transportation and reducing greenhouse gas emissions. This is accomplished through seven directives: Land Use; Cycling; Walking; Transit; Motor Vehicles; Goods, Services and Emergency Response; and Encouragement, Education, and Enforcement. Specific policies and action items are detailed for each directive, which are then attached to implementation tools as recommendations for the City.[50]

Metro Vancouver's regional cycling strategy, Cycling for Everyone, was developed by TransLink to achieve two major goals: more cycling and safer cycling. This is accomplished through a number of strategies aimed at improving the bicycle transportation network, including hard infrastructure and amenities for cyclists and offering a variety of cycling programs aimed at education and encouragement of ridership. The plan is also linked to an implementation and funding

strategy that identifies priority projects and funding mechanisms through TransLink.[51]

Parking

- Parking Right Tax. The City of Vancouver works to manage parking through the institution of a Parking Rights Tax. The policy imposes a 24 percent tax on the price of all parking rights purchased within the TransLink service area. The parking tax is applied to both public and private parking spaces, with exceptions given to residential lots for permit holders, metered parking, long-term storage of business vehicles (over 28 days), parking spots included in the sale of property, and other miscellaneous reasons. Metered parking spots not covered by the Parking Rights Tax have a separate five percent tax applied to them. Revenue from the Parking Rights Tax is funneled to TransLink to be put towards public transportation improvements. The tax was put into law in 2010 under the *South Coast British Columbia Transportation Authority Act*.

- Parking Demand Pricing. Parking is managed in Downtown Vancouver via demand pricing and a set of other guidelines that regulate parking. On-street parking is typically limited to one to two hours per spot, with the amount of time decreasing as demand increases. Parking fees vary by location in the city and the time of day. Smart meters are programed to charge higher rates during peak hours, and parking fees are adjusted yearly based on the most current parking data collected via annual studies.

Sustainable Transportation

- Frequent Transit Networks and Areas. Metro Vancouver has developed Frequent Transit Networks (FTN), which are networks of transit corridors that offer frequent and consistent public transportation servicing daily, with pick-ups occurring every 15 minutes. FTNs are a key part of the Metro 2040 Regional Growth Strategy and are cited to provide benefits to residents, developers, and the municipality as a whole. To supplement the creation of FTNs, Metro Vancouver institutes FTN Area and Urban Center zoning overlays to allow for higher density commercial, residential, and mixed-use development along the FTNs. Nodes and corridors of higher density uses reduce need for personal vehicles and improve access to public transportation.

- Street Design Guides. The City of Vancouver has developed street and sidewalk design guides for areas of the city depending on use. The design guides regulate sidewalk widths, green space coverage, tree location and size, and lighting. These guides create consistent human-scale pedestrian areas throughout the city and are housed within Vancouver's municipal code.

Travel Demand Management

- Dedicated Motor Fuel Tax. The British Columbia provincial government charges multiple levels of fuel taxes dependent on location. There is a dedicated motor fuel tax of 17 cents per liter for all motor vehicle fuel purchased within the TransLink service area. Revenue collected through the tax is funneled to TransLink to be put towards public transportation improvements. This

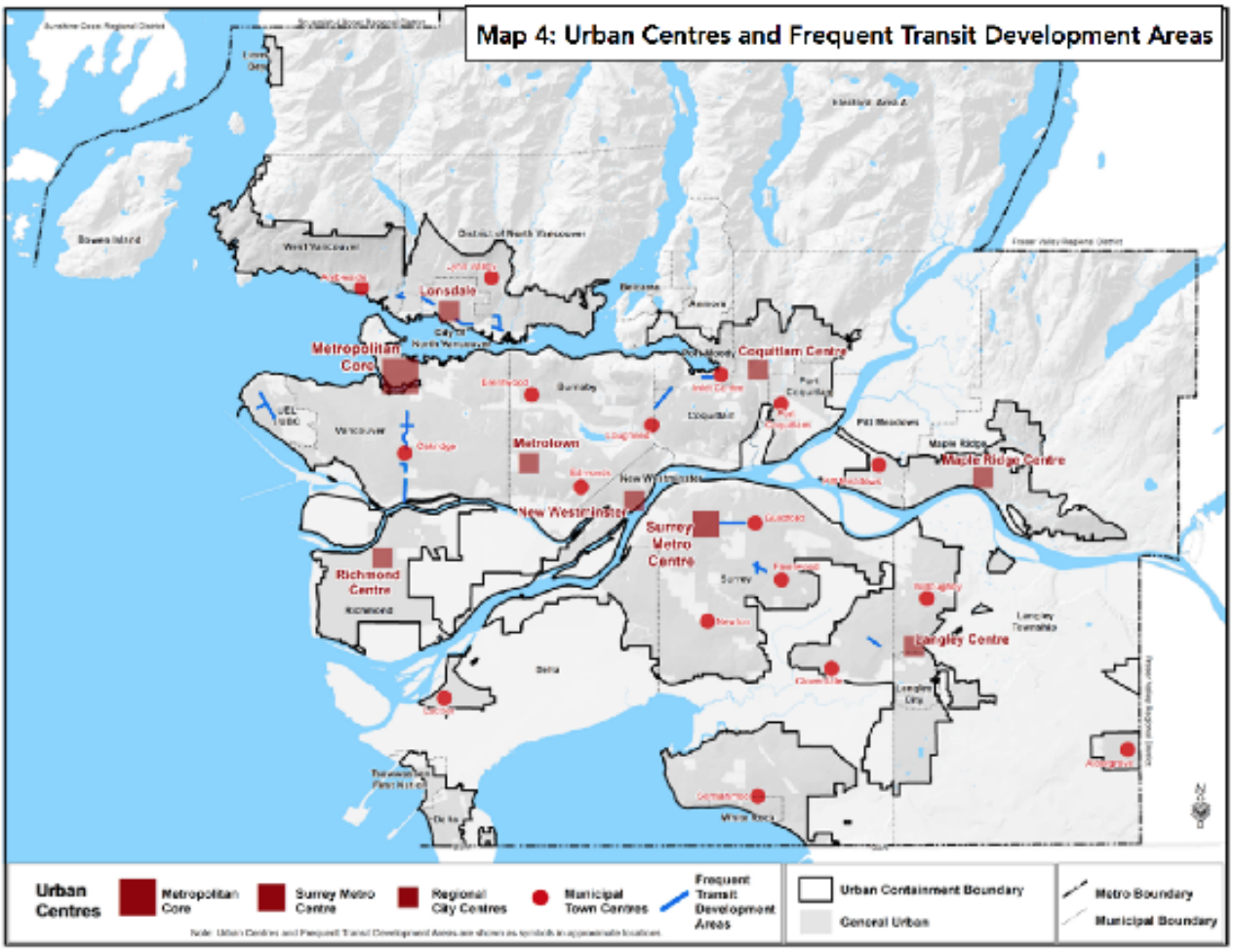


FIG. 13
Urban Centres and Frequent Transit Development Areas

tax accounts for approximately one quarter of TransLink's funding.

- BC Bus Pass Program. The provincial government offers the BC Bus Pass Program to all low-income seniors and persons with disabilities. For a $45 annual charge, the program offers eligible residents with a BC Bus Card that can be used for all TransLink fares.

- Transit Zones. To incentivize the use of public transportation in Downtown Vancouver, TransLink has instituted pricing levels dependent on the zone in which an individual travels. The Metro Vancouver area is broken into three zones, with Zone 1, which encompasses downtown, being the cheapest. Zone 3, the farthest from the city center, is the most expensive zone with fares approximately double of those in Zone 1. This not only works to increase ridership in the city center, but is also a more accurate representation of the cost of servicing less-urban areas. It also has the potential to influence land use and other development patterns.

- Resident Survey. Metro Vancouver and TransLink survey residents regularly on the strengths, weaknesses, and opportunities of public transportation and pedestrian and bicycle networks. The information gathered includes frequency and amount of use, how safe users feel, and their satisfaction with existing infrastructure and amenities. The information gathered

from these surveys plays a key role in informing transportation planning as well as guiding funding decisions. This has been a large contributor to Vancouver's success in promoting the use of more sustainable modes of transportation and making improvements in areas tailored closest to residents' needs.

- Infrastructure Cost-Sharing. TransLink funds a considerable portion of the region's sustainable transportation infrastructure and amenities through its Infrastructure Cost Sharing Program and Major Roads Network Program. The programs use TransLink funding to share costs with local governments to update and improve transit infrastructure. The 10-Year Vision allocated funds to various projects, with specifics of funding projects identified in various transit plans based on location and mode of transportation. Special attention is paid to bicycle and pedestrian upgrades to promote sustainable options. The regional cycling strategy also identifies areas in need of infrastructure improvements and details the allocation of funds from the cost-sharing program.

PROGRAMMATIC STRATEGIES

While many of Vancouver's policy documents outline the content and intended outcomes of the City's various programmatic strategies, the majority of information about the City's programs are culled from both the City of Vancouver Website and the TransLink website. In general, Vancouver's programmatic strategies tend to offer both online tools and face-to-face outreach programs that augment digital resources.

Parking

- Neighborhood Parking Benefit Districts. After analyzing their parking needs, Vancouver discovered that spaces where parking permit programs were being used were highly undervalued. As a means of bringing those prices up to a fair market rate while simultaneously promoting alternative modes of transit, the City has begun piloting Neighborhood Parking Benefit Districts. These give neighborhoods an opportunity to opt into an increase in parking permit costs with the understanding that a portion of that revenue will be invested in local improvements such as sidewalks, lighting, and nearby amenities. This program, outlined in the Transportation 2040 plan, both de-incentivizes car ownership and enhances pedestrian infrastructure while simultaneously educating residents about, and engaging residents in, the City's travel investment process and priorities.

- Pavement-to-Plaza and Parklet Programs. Vancouver's city-led Pavement-to-Plazas program provides high-impact public spaces at low cost. In the city, excess road space (such as wide or angled intersections and side streets) is identified, and the asphalt is painted or coated, protected with decorative bollards, and populated with movable tables and chairs. These temporary transformations serve as pilot parks that allow the City to study how a public space in that location would be utilized. In locations where the plaza was used in positive ways, the City invested in further development. Thus, through the Pavement-to-Plaza program, parking spaces are

being incrementally and strategically transformed into public parks.

- Parklet Program. Vancouver's Transportation 2040 plan also calls for a permit-based parklet program to transform on-street parking into places for people to sit, relax, and enjoy the city. Whereas the Pavement-to-Plaza Program is City-led, the Parklet Program encourages private sponsors to select locations and prepare designs to be transformed into small public parks. Parklets often have additional benefits such as addressing sidewalk pinch points by adding more space for people to walk. The cost to the city is minimal, since they are usually designed and paid for through in-kind services and local businesses (Also see Parklet Construction Manual). Data about the use of these spaces enhance the capacity for the City to better understand public use and interaction with various types of new public spaces.

Sustainable Transportation

- TransLink Tomorrow. TransLink Tomorrow is Vancouver's initiative to continuously explore, test, and implement innovative ways to improve mobility in Metro Vancouver. Its goal is to ensure a more open and nimble approach to collaborating with industry, entrepreneurs, and academia that 1) enables seamless and efficient door-to-door mobility for people and goods; 2) promotes safe, healthy, clean, and compact communities; and 3) ensures affordable and equitable access for all. Highlights of the TransLink Tomorrow program include:

- The Future of Driving Plan. The Future of Driving plan sets forth the policy context for how automated vehicles and services might impact mobility pricing and regulation; land use and parking policies; managing transportation network capacity; travel demand growth forecasts and infrastructure needs; and implications for goods movement and mass transit operations. The findings aim to support municipalities to respond knowledgeably to public and council interests about automated vehicles as they relate to local, regional, and provincial planning objectives.

- New Mobility Research Grant Program (NMRG). This program provides research grants of up to $50,000 to well-defined projects undertaken by Canadian post-secondary researchers and their partners. NMRG projects may range from one year to two years in duration and can span a range of disciplines. All projects must relate to a new mobility theme and must have regional or local relevance.

Active Pilot and Demonstration and Adopted Projects

TransLink Tomorrow has piloted several innovative programs and initiatives, some of which have been adopted by the City. These include:

- Artificial Intelligence Bus Prediction. A pilot project to test the effectiveness of machine learning to improve bus arrival and departure predictions. As part of this pilot project, 10 bus routes will be selected and tested with these new predictive models. The project is expected to improve the accuracy of these predictions by 70 to 95 percent, which means fewer missed connections and a better customer experience.

- Electric Battery Buses. This 2.5-year pilot project is part of a pan-Canadian initiative led by the Canadian Urban Transit Research and Innovation Consortium (CUTRIC). It puts electric battery buses on one route where buses are able to get a full charge in approximately four to seven minutes at each end. Through data collection on bus and charging station performance, maintenance, and the overall customer experience, the pilot will provide valuable information about Vancouver's Low Carbon Fleet Strategy, which envisions a future with a zero-emission bus fleet.

- On-Demand Micro Transit. Currently, Vancouver operates community shuttles that make circuitous routes on infrequent schedules in lower density neighborhoods. To provide better, more responsive, and more customer-friendly transit service in these areas, they are piloting on-demand shuttle service using these existing community shuttle bus vehicles. During the pilot period, transit customers in one specific neighborhood, Bowen Island, are able to request a trip via phone or by mobile app and be directed to a nearby location for pick-up. The buses are routed dynamically in response to trip requests with the aim of getting closer to people's preferred pick-up locations and reducing wait times.

- Vanpool. To help provide affordable, shared-use mobility to areas that are difficult to access by public transit, Vancouver is partnering with Modo, a car sharing company similar to Zipcar, to develop and test different approaches to offering vanpool services through the use of existing car-share vehicles.

- Dockless Bike-sharing at UBC. Dockless bicycles are located and unlocked using a smartphone app, rather than a station, offering flexible bike-sharing options to more parts of the region at lower cost. One goal of this pilot program is to learn how to avoid urban space management issues that can occur when large volumes of bicycles in high-demand locations impeded public rights-of-way. This pilot launched in August 2018 and ran through the spring of 2019 and will contribute to the development of guidelines to help municipalities better manage personal on-demand mobility services like bike-sharing.

- Double-Decker Bus. This program was adopted along long-haul bus routes to increase transit capacity and provide a more comfortable ride for long-haul customers. Pilot buses were initially provided free of charge by bus manufacturer Alexander Dennis. Over the course of four months, the buses were evaluated from a customer experience and operational standpoint with overwhelmingly positive feedback. Customers were especially pleased with the increased capacity and comfort of the bus. Operationally, the bus scored well in drivability, ease of maintenance, and fuel economy. Based on the results of this pilot, TransLink issued a request for proposals for 32 new double decker buses that will be added to the fleet this year.

- Universal Fare Gate Access Program. The Universal Fare Gate Access Program provides fare gate access for customers with a disability who are physically not able to tap fare media at SkyTrain stations

and SeaBus terminals. Eligible customers receive a radio-frequency identification (RFID) enabled card to automatically open accessible fare gates when they move within close range.

- Mobility Hubs. Vancouver's mobility hubs are specific park-and-ride locations that have been supplemented with dedicated car-sharing parking spaces and various bike parking options, including secure cage parking using the TransLink Compass Card.

- Bike Theft Reduction Programs. Vancouver made bike theft deterrence central to their sustainable transportation efforts after TransLink's market research revealed that one in five cyclists in Greater Vancouver had experienced bike theft in the past five years. Twenty three percent of those people did not replace their bicycle for a year, and an additional 32 percent did not replace the bicycle for longer than a year. To combat bicycle theft and encourage cycling, Vancouver's Transportation 2040 Plan dictates that TransLink begin participating in a regional bicycle theft task force to research, implement, and coordinate programs and enforcement practices that address bicycle theft, including development of a bicycle bait program. The bait bike program was instituted in 2008 as an emerging strategy to combat bicycle theft. Through this program, as outlined in TransLink's 2013 Regional Cycling Strategy Implementation Plan, TransLink procures bicycles enabled with GPS tracking technology and trains transit police to recover stolen property and apprehend suspected bicycle thieves. Further, bait bike GPS technology is used to recover bait bikes from SkyTrain stations and major transit exchanges. TransLink covers all costs of this program, which amount to $25,200 per year.

- Customer Experience Transit Strategy. A focus in TransLink's 10-year investment strategy is to invest in programs that improve the customer experience. This strategy includes a comprehensive customer service training initiative to increase staff sensitivity and preparedness to make every trip easy and enjoyable for anyone who takes transit (Phase Two of the 10-Year Vision 2018–2027 Investment Plan, p. 19).

- Vancouver Taxi Roundtable. Part of Vancouver's strategy for reducing private automobile dependency is to promote the use of taxis. Through the Vancouver Taxi Roundtable, the City works with representatives of the taxi industry, the Passenger Transportation Board, Tourism Vancouver, and the Justice Institute to address taxi-related issues and explore options to improve service. This roundtable has piloted several projects including a program that allows taxis to travel in bus lanes; the incorporation of taxis into TransLink's Compass Card system; and other measures such as low-carbon vehicles, bike racks, ride sharing, and flat-rate fares for certain trips.

Travel Demand Management

- Employee Trip Reduction Program. The Greater Vancouver Regional District implements an Employee Trip Reduction Program aimed at encouraging more multimodal transportation use by government employees. To do this, the City established several tools for

reducing trips made by commuting employees, including a carpool ride matching program, vanpool empty seat insurance, cycling safety workshops and worksite facility upgrades, guaranteed ride home service, flextime, and a subsidized transportation program. The City also created a hotline for workers to sign up and receive transit assistance at any time. Employees with the best transportation habits are recognized monthly to increase the program's visibility and participation.

- TravelSmart. TravelSmart is TransLink's Transportation Demand Management (TDM) program that works to connect with customers on a personal level through a combination of face-to-face outreach, tools, resources, and strategic partnerships. The TravelSmart team works in synergy with TransLink's planning and infrastructure projects to ensure that customers know about new and existing services and how they can utilize them. Specifically, the program targets community and nonprofit entities, senior communities, newcomers, businesses, and school groups to ensure that residents and visitors to Metro Vancouver understand the sustainable transportation options available for their lifestyle. Under the umbrella of TravelSmart, TransLink provides the following resources for business owners:

- TravelSmart for Business. This program allows businesses to consult one-on-one with a TravelSmart advisor to formulate an expert-level, strategic approach to employee commuting and transportation issues.

- Compass for Organizations. Compass for Organizations is a transit program that helps employers ensure that their employees travel safely, reliably, and affordably. Through the program, employers can choose to have employees' transit cards loaded with a specific amount of money (from 10 to 100 percent of the employee's total transit fare) for a predetermined amount of time (from one month to forever).

- School Active Travel Planning. The School Active Travel Planning program encourages and promotes walking and cycling to school by consulting with school communities and other stakeholders to identify school transportation challenges and opportunities. The focus is to improve walking and cycling infrastructure around schools and increase education and awareness around active transportation. The program is a partnership between the City of Vancouver and Vancouver School Board and is a direct outcome of the Transportation 2040 Plan.

Victoria, British Columbia

Victoria is the capital of British Columbia and the core of the broader metropolitan Capital Region. It is known internationally as the "City of Gardens" and is located on the southern tip of Vancouver Island.

It is renowned around the world for its tourism, education, heritage, conservation, recreation, arts and culture, and high quality of life. The city as a whole has approximately 92,000 residents and is growing at a rate of 1.25 percent annually. Furthermore, the city receives nearly three million visitors each year, many coming from the mainland of Vancouver, Seattle, and Alaska (About Victoria, n.d.).

Victoria's downtown area is a mixed-use community that provides a blend of institutional, commercial, industrial, and residential activities through a series of neighborhoods. It is the heart of the city and the commercial, retail, tourism, and entertainment hub of the region. It is also one of the most recognizable downtowns in North America with 1,500 locally-owned and operated businesses, Canada's oldest Chinatown, a vibrant inner-harbor causeway, and a pedestrian street mall located on Government Street (About Victoria, n.d.).

Victoria's vision for the downtown core area is to:

> ... offer an array of vibrant urban neighborhoods surrounding a thriving, pedestrian-friendly downtown. All people will benefit from a high-quality public and private environment and a broad range of employment, housing, shopping, recreational opportunities, all within a well-connected and attractive urban environment that embraces the Victoria Harbor, celebrates its heritage, Victoria's role as the Provincial Capital, and provides a model of livable and sustainable urbanism.[52]

Given Victoria's mild climate, moderate topography, scenic routes and compact density, Victoria has implemented multiple strategies as it continues to shift its focus towards alternative modes of transportation within the downtown area.

Victoria utilizes a "hierarchy of transportation and mobility priorities" as a conceptual framework for transportation planning where pedestrians, cyclists, transit, commercial vehicles, and single-occupancy vehicles are ranked in descending order of priority (Figure 14, right)[53]. All of the master plans relevant to downtown reference and incorporate these priority travel modes for developing policies that reflect prioritization of pedestrian networks within the downtown core areas in public and private development. By developing a hierarchy of priorities and establishing individual plans that comply with this hierarchy, the multitude of travel modes within the city thereby function effectively together with road rights-of-way designed and managed to give priority to pedestrians, cyclists, public transit, and commercial vehicles over single-occupancy vehicles.[54]

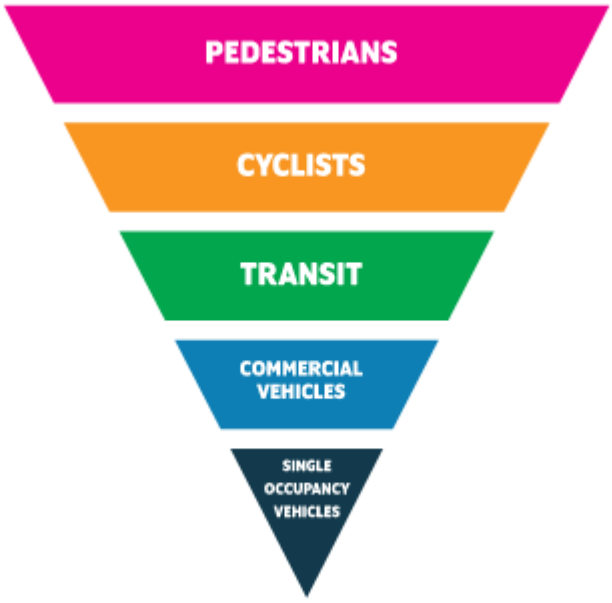


FIG. 14
Hierarchy of Transportation

This hierarchy of priorities has effectively created high walk, transit, and bike scores within the downtown area. Victoria's downtown area currently has a walk score of 99, a transit score of 76, and a bike score of 75. Furthermore, an increase in pedestrians, transit, and bicycle transportation modes is reflected in a survey done by the Capital Regional District in 2017 comparing travel to and within downtown to a previous survey in 2011 (see Appendix C). The surveys demonstrate an increase in pedestrians and cyclists alongside an overall decrease in passenger vehicles and drivers during the six-year period between the two surveys.

Methodology

Several plans were instrumental in writing and gathering information for this report. To determine policies and programs most relevant to Eugene, we collected and completed a thorough content analysis of each of Victoria's plans relevant to transportation in the downtown area. The following document provides a summary of the evidence accumulated throughout that research.

Victoria's Downtown Core Area Plan

In September of 2011, the Victoria council approved of the *Downtown Core Area Plan*. This plan applies to a broader area that includes not only the downtown neighborhood but also the Harris Green neighborhood, the Rock Bay portion of the Burnside neighborhood, and parts of the North Park, Fairfield, and James Bay neighborhoods. This plan replaces the *Downtown Victoria Plan* (1990), the *Harris Green Neighborhood Plan* (1995) and the *Harris Green Charrette* (1997) as the principal guide for planning decisions made by the City of Victoria within the downtown core area and will serve to implement the policy direction for portions of the urban core as described in the new *Official Community Plan*. It serves as a local area plan for the downtown and Harris Green neighborhoods and provides additional guidance for the portions of Rock Bay, Fairfield and James Bay that are located within the boundary of the downtown area in conjunction with their local area plans (Downtown Core Area Plan, 2011).

Within Victoria's *Downtown Core Area Plan,* Section 5: Transportation and

Mobility, several relevant policies and actions are implemented (see Appendix A). These policies recognize the need for connectivity between downtown Victoria and other pedestrian greenways and open spaces, improved access and movement for people with varying mobility needs, increased pedestrian safety, and improved sidewalk conditions. The need to maintain a pleasant walking experience in the downtown is addressed within several policies and is likely the reason Victoria has been so successful at increasing the number of pedestrians, cyclists, and transit riders. This plan also incorporates many unique methods for increasing alternative modes of transportation, such as through wayfinding, through-block walkways, and "All Ages and Abilities" bike paths that are discussed in further detail throughout this document.[55]

Victoria's Pedestrian Master Plan

The City of Victoria's *Pedestrian Master Plan* provides a reference for improving pedestrian mobility across the city. The primary aim of this plan is to increase the number of trips made by walking, to make those trips safer, and to make recommendations that will improve pedestrian conditions through policies, standards, maintenance, best practices, and future pedestrian infrastructure expenditures.[56]

The 2008 plan provides a basis for many policies implemented within Victoria's downtown, and several recommendations from the plan warrant mentioning. For example, road dieting and road space reallocation have contributed to redressing poor infrastructure provisions for non-automobile methods.

Victoria's Downtown Public Realm Strategy and Streetscape Plan

Victoria released the *Downtown Public Realm Strategy and Streetscape Plan* in October of 2017 with the purpose of offering a renewed design framework for downtown public spaces. It includes short- and long-term strategies and clarification of important requirements for public realm improvements and infrastructure, as well as a detailed catalogue of furnishings, materials, colors, and specifications for downtown streetscapes. The idea behind this plan is to provide design direction and construction standards for downtown sidewalks and public realm improvements and to provide a standardization for all streetscapes in downtown Victoria.

The process behind this plan included the synthesis of public and stakeholder engagement followed by inventory and assessment of existing conditions and issues in the downtown area. This synthesis guided the refinement and detailed design compiled within the plan.

This plan defines the public realm as all of the exterior social spaces in the downtown that are generally open and accessible to all people regardless of ownership, including all exterior spaces and surrounding built form elements that are visually and physically accessible, and the streetscape elements in those locations. The plan asserts that the overall quality, design, and function of the public realm has a significant influence on the local quality of life within the urban environment and is essential to achieving an attractive neighborhood experience. This plan defines streets as public spaces and offers best practices, design framework strategies, and several guidelines to help improve these integrated public spaces.[57]

Victoria's Bicycle Master Plan

Although developed in 1995, Victoria's *Bicycle Master Plan* has played an integral role in the development and expansion of bicycle use and networks in the downtown area. Victoria's original cycling goal was "to increase cycling's share of the total city trips to 12 percent by the year 2010." The City has since implemented a strategy to "create a network of bikeways to safely serve major activity centers throughout the city and make all city streets safe and enjoyable for cycling."[58]

Most of the population of Victoria is located within 6 km (3.8 miles) of the downtown area, making it an ideal city to implement cyclist and cycling strategies to improve alternative modes of transportation. The *Bicycle Master Plan* provides a blueprint for creating a more bicycle-friendly city. It summarizes present conditions, problems, and opportunities. It establishes goals to be attained and policies to be followed to reach those goals. The plan also presents priorities, a draft schedule, and estimated costs for implementing the plan. As a result, Victoria has been successful in implementing a network of separated bike paths that, when complete, will provide over 24 kilometers (14.5 miles) of bicycle infrastructure and encourage people of all skill levels to ride, skate, and rollerblade throughout the city.[59]

BCTransit *Future Plan* and the Capital Regional District: *Regional Transportation Plan* (RTP)

While neither of these plans makes direct policies in reference to the downtown core area, they do affect the transit network utilized by visitors and employees going to and from downtown Victoria. The Capital Regional District has implemented a target goal of 12 percent transit mode share by 2030. Due to the large number of visitors to downtown Victoria, much of this increased ridership is planned to stem from the downtown. The vision of the BC Transit *Future Plan* is "to be a leader of integrated transportation solutions connecting people and communities to a more sustainable future."[60] The RTP outlines actions that will facilitate its ongoing development, details required governance and funding mechanisms, and provides a vision for improving the region's transit network over the next 25 years. This will be accomplished in three ways: (1) by supporting local community goals and objectives such as the need to grow economic vitality, preserve green integrity, and develop livable neighborhoods that demonstrate the integration of all sustainable modes of transportation, (2) strengthening the link between transportation and land use in order to achieve sustainable growth and develop and promote community resiliency, and (3) identifying a Transit Future Network that includes four layers of transit service (rapid transit, frequent transit, local transit, and targeted services) to tailor transit to regional and local community needs.[61]

Victoria recognizes the tremendous potential of transit to contribute to stronger, more sustainable communities and intends to promote and influence land use in the region that will facilitate increased transit use and other sustainable modes of transportation. Additionally, Victoria plans to make significant investments in transit infrastructure and customer facilities through transit priority and customer transit facilities. Transit facilities refer to a variety of physical and operational improvements designed to give transit vehicles and their passengers priority

over general vehicle traffic to produce savings in transit travel times, the number of service hours, and fleet size required to operate service. This will be implemented through regulatory measures such as successful "Yield to Bus" regulations and signage; operational measures such as retiming traffic signals to respect the large number of passengers on transit vehicles compared to passenger vehicles; or physical measures such as exclusive transit ways, queue jumper lanes, and signal priority. The city also intends to expand transit facilities to improve customer access to the system and the ability to accommodate an expanded travel fleet. As the population of Victoria continues to grow and age and as traffic congestion increases, the city believes these measures will be critical to attracting a greater number of passengers to transit and meeting the future transportation needs and goals of the Victoria region.

ANALYSIS OF FINDINGS

The *Downtown Core Area Plan* introduces a framework for Transportation Demand Management (TDM) in Victoria. The framework of TDM is accomplished through many of the plans in the previous section of this document as well as in the following policies and programs introduced hereafter and is intended to:

- Reduce vehicular demand on road infrastructure;
- Encourage commuter options through sustainable transportation infrastructure;
- Improve travel efficiency;
- Reduce greenhouse gas emissions;
- Improve air quality;
- Maintain on-street, short-term parking to support retail, restaurant, and other local commercial uses;
- Manage public and private parking in balance with the overall vision for the *Downtown Core Area*, and
- Support the other transportation and mobility priorities described in the *Downtown Core Area Plan* and the Capital Regional District's *TravelChoices* strategy.

Gateways

Much attention is paid to gateways as a means to "signal and celebrate" arrival to the downtown area through their design. Victoria defines gateways as "physical and spatial elements that mark a primary point of entry to defined areas within a city, that may include open space, buildings, decorative structures, signage, or other special design features."[62] These gateways are located along primary roadways on city-owned land. Each is individually designed to include landscaping, sculptural elements, fountains, lighting, signage, or a combination of these elements while providing a visual reference for pedestrians, cyclists, and motorists entering the downtown. Boulevards also serve as primary gateways into the downtown core area and are generally characterized by higher levels of traffic movement at higher speeds than other streets. Their function as a gateway is emphasized through street trees, landscaping, and high-density commercial uses. Specific policies and actions related to gateways in the Victoria *Downtown Core Area Plan* (2011) are contained in Appendix A of this document.

Road Dieting

As part of the *Pedestrian Master Plan* (2008), Victoria has implemented techniques of road dieting to help expand current roads and accommodate for wider sidewalks. Road dieting typically involves

converting a four-lane road (two lanes in each direction) to a three-lane road (one lane in either direction with a center left turn lane) and using the remaining road space for bike lanes and/or wider sidewalks. Road space reallocation involves reducing the vehicle capacity on roads that are under-utilized or that have alternatives within the road network. This typically involves reducing the number of through and/or dedicated turn lanes in order to reallocate road space to other modes. This is acknowledged as a much more cost-effective method than widening a road right-of-way to add space for bicycles.

The *Pedestrian Master Plan* further designates pedestrian priority areas by including features such as narrow vehicle travel lanes, wide sidewalks, curb extensions, frequent marked crossings, raised crosswalks, and pedestrian-scale street furniture, among other features. A sidewalk priority index has been implemented, providing a method for assigning a score to each potential location for a new or extended sidewalk. This index combines two indices to form the final sidewalk priority index: (1) a pedestrian potential index measuring the strength of environmental factors that favor walking and likelihood the area will generate pedestrian travel, and (2) a deficiency index determining how critically pedestrian improvements are needed, with factors such as how difficult or dangerous the street is for walking (see Appendix D).[63]

Through-block Walkways

Victoria has implemented policies throughout its *Downtown Core Area Plan* (2008) to strategically incorporate through-block walkways at mid-block locations with the goal of achieving smaller city blocks while providing public access and direct connectivity within the pedestrian network. These unique features include the narrow historic alleys in Victoria's Chinatown and Old Town to examples constructed in more recent years such as Fan Tan Alley. These intimately scaled pedestrian spaces offer an alternative to the larger scale character of conventional city streets and provide opportunities to accommodate niche retail and other active commercial areas. The *Downtown Core Area Plan* recognizes "the potential of through-block walkways to provide a new dimension to the pedestrian experience that encourages a sense of discovery through opportunities for pedestrians to explore the uniquely designed, attractive, and vibrant spaces."[64] The key principles and general design criteria of through-block walkways are located in Appendix B in addition to relevant through-block walkway policies and actions in Appendix A.

Some highlights of these policies include considering opportunities to redesign and replace key pedestrian connections with new through-block walkways by incorporating urban design that identifies and enhances the unique character of each walkway while contributing to placemaking. Victoria considers several partnerships with the private sector to make through-block walkways in strategic places possible. Where coveted through-block walkways are not located on land owned by the City of Victoria, Policy 5.39 in the *Downtown Core Area Plan* requires a legal agreement to address the provision of year-round public access, a schedule of regular maintenance, and the ability to maintain direct access to the passageway from commercial use. Policy 6.12 of the Victoria *Official Community Plan* also asserts that the city secures and develops these

FIG. 15
Pedestrian Network

passageways by dedication of a subdivision, rezoning, density bonuses, and other available mechanisms. Public access is attained through legal mechanisms, such as the dedication of the through-block walkways as a right-of-way or through use of an easement. The *Official Community Plan* gives further guidelines requiring that they be located along long city blocks with walkways open to the sky, located to allow unimpeded sight lines, publicly accessible throughout normal business hours at a minimum, and inclusive of wayfinding features.

Victoria's *Downtown Public Realm Strategy and Streetscape Plan* offers insight into the way the city integrates alleys into their pedestrian network and makes them unique and accessible. Within designated "weaving pedestrian prioritization networks," the city allows sidewalk cafes, provides financial incentives to businesses, and schedules art and culture programming such as musical performances and festivals.[65] They also provide permits for "legal street art" and have created an art program that pairs several artists each year with laneways to create temporary artwork. Meanwhile, they use street design elements such as special pavers and color to demarcate laneway entry points at mid-block street crossings and incorporate these through-block walkways into their wayfinding signage. Conceptual diagrams of through-block walkways found within the *Downtown Core Area Policy* can be found in Appendix B.

Wayfinding

The *City of Victoria Wayfinding Strategy* was implemented in 2017 and further reinforces Victoria as an inclusive, walkable, and welcoming city. Wayfinding refers to systems that help people find their way from one place to another with the broad aim of efficiently assisting visitors and residents in navigating their way to key attractions, destinations, public parking, and other

services and amenities. The *Wayfinding Strategy* provides guidelines for nine individual types of signs to make them clear, compatible, and recognizable to users. The information provided within this document provides a level of detail that it makes it possible for any sign fabricator to reproduce the wayfinding elements to fit seamlessly into the wayfinding system.[66]

The document is 124 pages long and offers a thorough strategy for integrating and incentivizing the identified travel mode priorities within the city. Bike routes have been integrated into the wayfinding strategy by providing cyclist speed and distance to locations as well as maps showing cyclist routes. Primary pathways for pedestrians have been identified to encourage users to travel by foot through certain areas. Other wayfinding signs located throughout the downtown are utilized to encourage and direct travelers towards public transportation. Wayfinding signs mounted at transit stops are strategically located to help provide an efficient means to increase systems coverage at a point where individuals beginning or ending a journey are likely to encounter it. Bus shelter maps and transit locations have been included in Victoria's *Wayfinding Strategy* to help integrate the pedestrian, cyclist, and transit networks within the city.

Wayfinding is given much attention throughout Victoria's plans. It is mentioned within several planning documents, including the *Downtown Core Area Plan, Downtown Public Realm Strategy Plan,* and the *Pedestrian Master Plan*. Victoria has made wayfinding a unique priority and has been quite successful. Eighty-two percent of people were more likely to walk after consulting a map.[67] This strategy has even secured the blessing of First Nations people for the incorporation of Lekwungen place names on 11 large wayfinding signs within the downtown core area.

Skateboarding

In February of 2016, the City of Victoria passed the *Streets and Traffic (Skateboarding) Amendment Bylaw* removing the current prohibition against and the authority to impound the use of skateboards and other similar modes of transportation (i.e., roller skates, in-line skates, and non-motorized scooters). This bylaw established rules to govern their use on highways within the downtown and throughout the city. These users have the same rights and duties as cyclists and therefore are required to wear lights when skateboarding at night or when dark outside and must signal other users of the roadway of turns or decreases in speed. Users are not permitted to skateboard on city sidewalks or in crosswalks, must ride single file, and ride as close to the right side of the street as possible or in bike lanes, if available. Furthermore, failure to follow these rules is subject to fines in the range of $100 to $125. The city wishes to encourage skateboarding as a low carbon way to travel city streets and has created many city maps such as the "Skate City" map to increase these alternative modes of transportation within Downtown. The *Streets and Traffic (skateboarding) Amendment, Bylaw Number 16-013* provides the legal framework for how Victoria has implemented skateboarding into their transportation network.[68]

Victoria Regional Rapid Transit Project (VRRTP)

In response to significant increases in vehicle traffic coming into Victoria,

growing road congestion, and the commitment made in the 2009 *Provincial Transit Plan* to increase ridership and decrease greenhouse gas emissions, the Ministry of Transportation and Infrastructure, the Capital Regional District, and BC Transit formed a partnership to develop the Victoria Regional Rapid Transit Partnership (VRRTP). The VRRTP is a proposed rapid transit corridor from the West Shore to Victoria that would be routed downtown through Douglas Street and provide a safe, convenient, reliable, attractive, and green alternative in the capital region. Several public surveys of businesses along the proposed Douglas Street corridor and their customers were completed in July 2010, and the project was found to have overall public support. Furthermore, the proposed VRRTP was considered as a means of providing significant travel time advantages over the automobile because it was planned to allow bypass of general traffic while eliminating the need to find and pay for parking. However, it was found to be expensive with little benefit. It would only slightly improve existing bus and service lines while failing to increase ridership, improve travel time, reduce greenhouse gas emissions, and increase incentives for development. The VRRTP is still listed as a program the BC Transit is undertaking on their website, but recent publications do not mention the project.

All Ages and Abilities (AAA) Bicycle Network

The City of Victoria has developed an integrated network of bike paths across the downtown area and different amenities across the city. The City initiated the All Ages and Abilities (AAA) network planning process in 2014.[69] After nearly two years of analysis, design and consultation in partnership with international consultants and local partners, the City adopted the AAA network as part of the implementation of the *Bicycle Network Master Plan*, which will provide over twenty-four kilometers (14.5 miles) of AAA bicycle infrastructure in the downtown area.[70] This new active transportation network will allow people of all skill levels to ride, skate, and rollerblade throughout the city. It will also encourage more people who live, work, play, and visit Victoria to intentionally choose to ride bikes instead of other modes of transportation that increase greenhouse gases.

The current cycling network includes a broad range of cycling facilities and amenities which include:

- 41 km of marked bike lanes
- 2.6 km of multi-use trails, such as the Galloping Goose Trail
- 2 km of buffered bike lanes
- 18 km of signed bike routes
- Three bike boxes supporting cyclist movements at intersections
- Over 1000 parking spots for bikes (double what was available in 2009)
- City parkades offering four electric bike re-charging stations and 100 bike parking spots covered with 24-hour security[71]

In 2015, the Victoria council approved a plan to implement protected bike lanes on Pandora Avenue and Johnson Street within the downtown area.[72] The council decided to proceed with one of two design principles: (1) a two-way protected bike lane with traffic signal changes on Pandora Avenue, or (2) a pair of two-way protected bike lanes, which experienced great success with about 1,200 trips per day.[73]

With these expansions to the bicycle network, the City is also partnering with

FIG. 16
Victoria Bike boulevard w/ Bus in picture

the Bike to Work Society to provide orientation rides to help people get familiar with the new bike lanes. These bike tours of Victoria begin in the heart of the Inner Harbour and downtown Victoria and are a great source for visitors and residents to explore and become familiar with the bicycle network in the downtown area.[74]

Bicycle Parking Strategy

As part of the *Downtown Core Area Plan*, the City of Victoria has created a policy to ensure bicycle parking standards in the downtown area. This policy ensures that Class 1 and Class 2 bicycle parking facilities are located in appropriate locations that are in highly visible areas to allow natural surveillance and improve personal safety, are on the same site as the building they serve, are within 15 meters of the main entrance to the building, and are closer to the main entrance than any motor vehicle parking stall. Victoria now has over 1,000 bicycle parking spots as well as re-charging stations for electric assisted bicycles.[75]

In almost all cases, government office buildings are equipped with bicycle parking facilities, primarily bicycle racks, storage areas, or a combination of the two. Additional facilities such as showers or changing rooms are provided at the Richard Blanshard Building and the Royal BC Museum.[76]

Vehicle Parking Strategy

Since vehicle transportation is the lowest on the hierarchy of priorities for Victoria, the City is initiating policies that prevent future parking structures from being built and instead are creating different types of incentives to encourage either alternative modes of transportation or the use of sustainable

transportation. Recently, Victoria has raised their parking fees for meters within the downtown area and has created a tiered fee structure. Parking meter rates become higher closer to the core areas of downtown than outside of the core area.

The City is considering reducing its parking rates for van, carpools and electric vehicles in parkades in order to incentivize car sharing transportation options. Parkades are also enhancing and providing additional bike storage as an incentive to use bicycles in the downtown area instead of single occupancy vehicles.[77]

Parking Officers and Customer Service Program

Victoria has been implementing a Parking Ambassador program in which the city enhances the role of its parking officers by providing additional emergency first aid training and customer service training. Victoria further enhances the role of these officers by adding additional responsibilities to the position, which includes providing the community with information and resources and giving warning tickets. In addition to guiding safe and high-turnover on-street parking, parking ambassadors will provide directions and more "eyes and ears" on the street and report service needs such as graffiti or overflowing garbage bins. They are knowledgeable about Victoria's businesses, landmarks, city programs, and services and help to connect residents and visitors with destinations and information.[78]

FIG. 17
Victoria Parking Strategy Map

Arlington, Virginia

Located in Northeast Virginia, Arlington County is the smallest self-governing county in the United States and has no incorporated cities. Comprised of 26 square miles of land, Arlington is bordered on the North by the Potomac River, across from Washington, D.C.

Arlington's proximity to the nation's capital provides the impetus for siting a range of federal offices and agencies in the county. The county is urban in nature and has relatively flat elevation. Arlington was an early adopter of transit-oriented development strategies and has been concentrating development around transit stations for over thirty years. As such, many projects are focused around transit lines, referred to by the county government as "Planning Corridors." Over half of all Arlington residents live in these planning corridors, and they were a primary focus of our research.

Population and Economy

Arlington County has an estimated population of 225,200, growing at a rate of 1.45 percent annually.[79] An estimated 75,000 commuters enter the county each work day and travel for an average of 28.6 minutes to arrive at work. Currently, Arlington has a median household income of $112,138.[80] Arlington County's transportation planning focuses on developing connectivity between employment and activity centers and residential areas. Arlington's proximity to Washington, D.C. and a range of universities, public agencies, and military institutions gives the county a cohesive regional character and informs the public perception of Arlington as a large city rather than as a county. The robust economy and access to public sector institutions makes Arlington an attractive place to headquarter businesses and has resulted in a strong economy with low unemployment (2 percent compared to the national unemployment rate of 3.9 percent), high future job growth (39 percent compared to the national rate of 34 percent), and strikingly high incomes for individuals, households, and families.[81]

Transportation Infrastructure

Arlington has well-developed pedestrian infrastructure, with over 90 percent of residential streets equipped with sidewalks. Arlington also features extensive cyclist infrastructure, including:

- 52 miles of multi-use trails
- 29.6 miles of bicycle lanes
- 3.8 miles of buffered lakes
- 2.9 miles of protected lanes
- 1.7 miles of bike boulevards
- 63 miles of on-street routes[82]

The Arlington Transit (ART) system operates with clean burning compressed natural gas (CNG) to reduce emissions and provides ADA accessible services across its fifteen routes. ART collects fares via SmarTrip cards—pre-loadable fare cards available at Metrorail stations and online—or cash. Fares are $2.00 per adult rider and $1.00 for senior citizens, people with disabilities, and K-12 students.[83]

Commuter Behaviors

The majority of residents in Arlington commute by driving alone. However, 34 percent of residents use other modes such as public transit and biking to commute. Arlington County Commuter Services supports regional TDM initiatives through Mobility Lab, a research institution that publishes a regional "State of the Commute" report. The 2016 State of the Commute report states that the drive alone rate in Arlington County is 44 percent for Arlington residents and 55 percent for commuters who work in Arlington but live elsewhere. This rate is the best in the region, with the exception of Washington, D.C. Many Arlington residents report carpooling, and 64 percent of Arlington carpoolers reported that they walk to their meeting point to avoid using a car altogether. Overall, most of Arlington's non-SOV commuters report that cost and time savings were their primary motivations for using their preferred transportation mode or modes.[84]

Methodology

To identify and assess Arlington County's strategies for supporting and enhancing multimodal transportation options in and around the downtown area, we reviewed a range of plans and policy documents, as well as online resources from partner agencies and nonprofit organizations. Researchers searched for relevant terms, noted their frequency in the document, and identified the policies, projects, and regulations related to the determined topic. We sourced a range of plans to identify the programs that are most relevant to the City of Eugene and its goals. Our information sources included:

- Master Transportation Plan (MTP)
- Bicycle Element
- Parking & Curb Space Management Element
- Demand and System Management Element
- Pedestrian Element
- Transit Element
- General Land Use Plan (GLUP)
- Special Planning Areas
- Development Corridors
- Capital Improvements Plan (CIP)
- Metro & Transportation
- 2016 State of the Commute Report

FINDINGS

The following sections detail the planning projects, policy tools, and programmatic strategies for increasing the mode share of active and public transportation to the downtown area. Findings generally address connectivity of Arlington's downtown areas to both university districts and regional connectivity with the Greater D.C. area.

Focus: University to Downtown Connectivity

The city of Eugene and Arlington County share robust student communities and have opportunities to enliven downtown areas and increase the multimodal share of trips by focusing on connectivity between university facilities and downtown areas. Enhancing the safety, comfort, and accessibility of the bicycle and pedestrian infrastructure along corridors between downtown and the university can also reduce accidents.

Focus: Regional Connectivity with Neighboring Jurisdictions

While Eugene may not have 70,000 commuters entering daily, like Arlington, the city acts as an employment center for Lane County residents living in Springfield, Veneta,

Junction City, Coburg, and Creswell. As such, our case study research seeks to identify strategies for enhancing regional connectivity to downtown areas, looking to Arlington's thriving regional transportation systems as exemplars.

Planning Corridors and Special Mixed-Use Districts

The American Planning Association defines planning corridors as:

> "linear pathways that connect places and allow for the movement of people, goods, or wildlife. They often center around transportation infrastructure such as streets, highways, and public transit, but can also center around historic sites, habitats, rivers, or other natural features. They may be regional in scale, as in a heavy rail corridor, or extremely local, as in a retail corridor along a city thoroughfare."[85]

Arlington's GLUP identifies major planning corridors to advance connectivity within the region. The GLUP includes George Mason University and Marymount University in the Rosslyn Ballston Metro Corridor. The plan engages a range of projects, policies, and zoning strategies to enhance transportation infrastructure, economic activity, and public use. The foundational tool of this technique is the zoning classification.

The American Planning Association offers the following insights about mixed-use zoning:

> "Zones which permit a combination of uses usually segregated according to trilogy of residential, commercial and industrial are also being established by many communities. Caution should always be exercised when devising these zones so that the residential nature of the neighborhood is not destroyed, if commercial or industrial uses are to be combined with residential, or that the demands and characteristics of either commerce or industry will not interfere with each other where these two uses are mixed."[86]

Special mixed-use districts around Arlington's planning corridors encourage trips through the area by enabling and encouraging a greater diversity of destinations along the route. Two districts that focus

FIG. 18
Planning Corridors in Arlington

specifically on supporting downtown area development are the Clarendon Special Coordinated Mixed-Use District and the Virginia Square Special Coordinated Mixed-Use District.[87]

Arlington County mitigates the risk of land use types interfering with one another by stipulating specific development types and uses in its mixed-use districts. For example, the Western Rosslyn Coordinated Redevelopment District seeks to expand affordable housing, energy efficiency, and multimodal transportation. The district facilitates the replacement of aging public facilities with development that serves its objectives, including market rate and affordable mixed-use housing and indoor and outdoor public recreational facilities.

Enhance Bicycle Infrastructure Between University and Downtown

The bicycle element of the MTP identifies two projects focused on completing the bicycle network between universities and other centers of activity. Two of the projects are:

- Project 3-31: Old Dominion Drive - Lorcom Lane - Old Lee Highway connection will connect several bicycle corridors and expand safe access to Marymount University.

- Project 3-54: Rock Spring Road Bicycle Boulevard: suggests developing a bicycle boulevard to further connect Marymount University to the existing network of bike lanes.

Facilitating improved connectivity for cyclists by filling in gaps in infrastructure and enhancing areas where cyclists share the road with automobiles supports an increase in the mode share of cycling.

University Partnerships

Georgetown and Marymount Universities both offer shuttle services to and from downtown areas. Shuttle programs help students—who may be new to the area—to develop consumer relationships with downtown businesses, helping to enliven the

FIG. 19
Special Mixed-Use Districts Follow Transit Lines

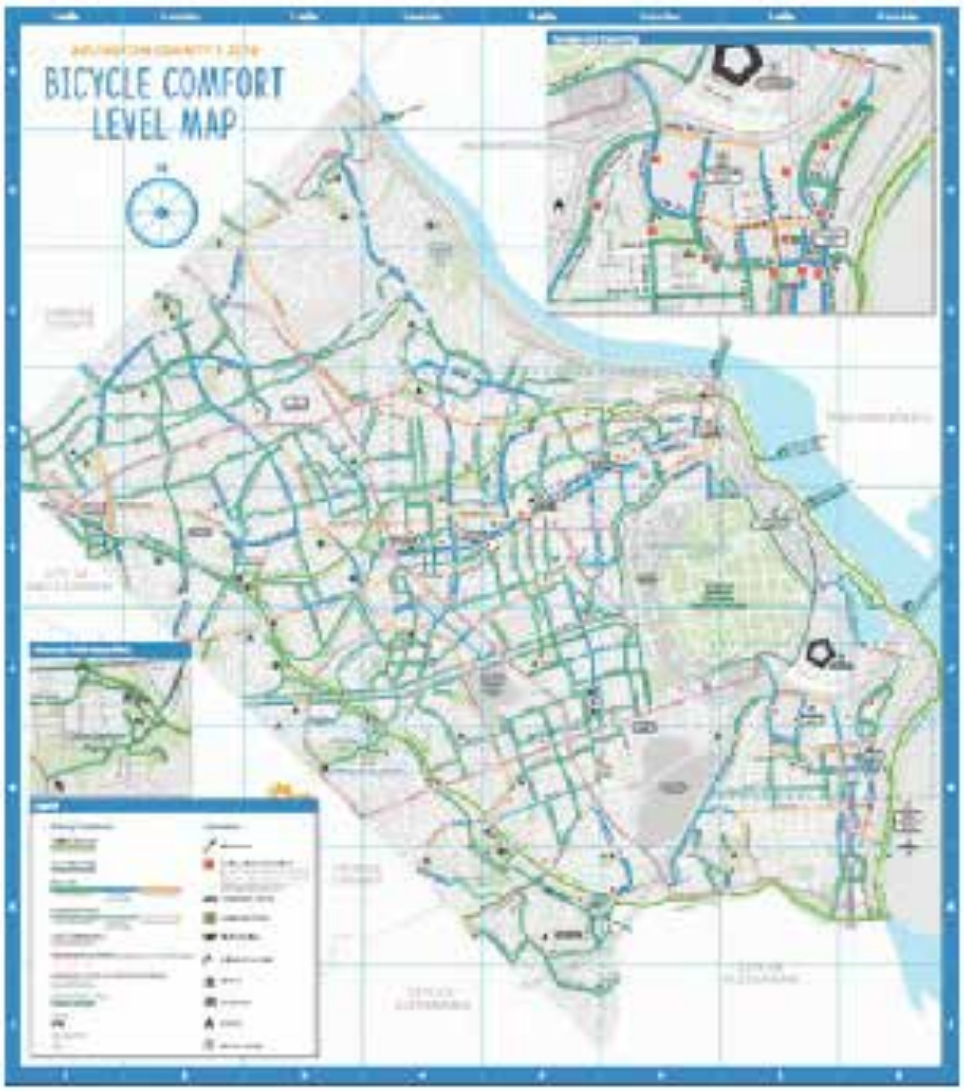


FIG. 20
Arlington Bicycle Comfort Map

downtown area. These shuttle services make it easier for students to move to a new area without a vehicle, reducing new single occupancy vehicle users. Universities also offer educational programming around bicycle and pedestrian safety.

Marymount's program provides service to and from campus facilities and key transit stations on a fifteen-minute basis. The university hosts an app to track shuttle progress, so students can more conveniently plan their trips. Furthermore, the university website positions the shuttle service as an alternative to single occupancy vehicle travel.[88]

Nonprofit Partnerships

BikeArlington, a bike education and encouragement program facilitated by Arlington County Commuter Services (ACCS), publishes and regularly updates a Bicycle Comfort Map. The map uses symbols to identify school sites, including the county's university facilities. The clear wayfinding and regular updating provided by this map supports safer, more comfortable cycling by communities throughout the county. This map supports increased cycling by enabling would-be cyclists to easily view information about safety and connectivity, helping them to plan

their routes and make safe, enjoyable journeys.

Pedestrian Infrastructure and Promotion

While Arlington already boasts impressive pedestrian infrastructure, the Arlington MTP's pedestrian element seeks to have a comprehensive network of "appropriately lit, ADA accessible sidewalks; emphasize projects within priority zones near schools, transit stops, and commercial centers."[89] A complete, well-lit, and accessible sidewalk network facilitates greater non-vehicular access to downtown areas by enhancing pedestrian comfort and extending walkability to persons with mobility challenges, children, or concerns about safety.

Arlington also seeks to grow the mode share of pedestrians through messaging and public information, with Policy 9 of the MTP pedestrian element focusing on opportunities to develop promotional strategies to encourage walking. The county coordinates with university and college partners to facilitate these promotional campaigns and has student-specific events at least once a year.[90] These events focus on the specific transportation needs of students.

Transportation Demand Management (TDM) Programs

Transportation Demand and System Management is a program of information, encouragement, and incentives provided by local or regional organizations to help people understand and use all their transportation options to optimize all modes in the system. TDM also attemps to counterbalance the incentives to drive that are prevalent through subsidies for parking and roads. These are both traditional and innovative technology-based services to help people use transit, ride-sharing, walking, biking, and telework.

The Demand and System Management Element of Arlington's MRP serves to address four purposes:

- To improve the efficiency and effectiveness of TDMP programs and services in the Commonwealth of Virginia;
- To serve as a management and policy document for the TDM program operators;
- To maximize the investment of public funds and achieve the greatest possible public benefit; and
- To provide the basis for inclusion of an operator's operating and capital programs in planning and programming documents such as the Six Year Improvement Program, Statewide Transportation Improvement Program, Transportation Improvement Program, and Constrained Long-Range Plan.

Within the TDM, Arlington discusses a range of TDM strategies to enhance connectivity to downtown areas. These strategies range from incorporating TDM measures into the built environment to facilitating TDM efforts across multiple jurisdictions.

TDM policies from the Arlington Master Transportation Plan relevant to engaging with university areas include:

Policy 2: "Incorporate TDM measures with respect to all existing public buildings and facilities, irrespective of redevelopment status."

FIG. 21
Capital Bikeshare

A. Ensure that all county facilities and schools include TDM plans and measures.

TDM policies relevant to enhancing regional connectivity include:

Policy 5: Apply TDM programs to non-work travel, as well as commuting, for resident, visitor, and employee trips through informational displays, website, promotional campaigns and mailings of materials.

C. Implement a system such as TravelSmart to provide individualized marketing to target transportation demand. (TravelSmart, used in more than 300 projects around the world, identifies individuals who want to change the way they travel and uses personal, individualized contact to motivate them to reconsider their travel options. TravelSmart gives participants the customized information they ask for to help them get started, or to continue walking, bicycling, riding transit, or carpooling.)

Policy 6: Coordinate TDM efforts with other jurisdictions and agencies across the region, and actively promote the expansion of the TDM program.

B. Enhance the SmartTrip card (Washington Metropolitan Area Transit Authority's electronic–fare–media card) or create an EcoPass to include options for employers, neighborhood associations, or certain age groups to buy discounted bus passes.

Capital Bikeshare Program

Arlington County's Capital Bikeshare program coordinates with both universities and regional partners to optimize use options. They seek to integrate bike-share programs with bus, rail, and ride-share programming. This is achieved by carefully locating stations and racks, facilitating ease of integrating transit modes through amenities like bike storage on buses, and adoption of technologies like dockless bike sharing and electric-assist bicycles. Arlington's bike-share policies prioritize equity both through infrastructure (locating stations to maximize use for residents without vehicles, adopting electric assist bikes) and programs (reducing pay barriers, supporting bicycle loan programs). Policy tools from the MTP bicycle element that enhance the Capital Bikeshare Program are as follows:

Policy 6: (m) Establish bicycle use as a mainstream travel mode. Raise visibility and participation of

bicycling in Arlington through events, prominent facilities, education and encouragement activities.

N. Work with transit operators, such as WMATA, on the integration of bike sharing services into transit promotions and fare media. Emphasize Capital Bikeshare as part of a multimodal, regional public transit system.

Policy 15: Coordinate with regional partners and private providers to increase bike-sharing across Arlington and the Washington, D.C. region.

A. Reduce barriers, such as payment methods and age requirements, that limit the use of Capital Bikeshare and other bicycle-sharing systems.

B. Locate bike share stations to attract greater numbers of system users and improve non–motorized access to County facilities and transit services and ensure that convenient access to bike share is available especially, in lower-income residential areas.

C. Identify how GPS-based, dock-less bike sharing systems can best integrate with and complement Capital Bikeshare and other transportation services. Investigate best practices for regulation of dockless bike share and implement agreements with private providers of dockless bikes.

D. Promote bike sharing as a preferred travel mode for first and last mile trips to and from transit services.

E. Work with bike-share providers to add electric-assist bikes, tricycles and other types of bicycles that can better accommodate the travel needs of persons with mobility disabilities.

F. Support privately provided loaner bicycle programs for users such as employees and hotel guests.

Boulder, Colorado

This section provides an overview of the City of Boulder and its plans, policies and programs. The findings are organized into three categories: (1) sustainable transportation, (2) travel demand management, and (3) parking management.

COMMUNITY CONTEXT

The city of Boulder is located below the iconic Flatirons on the Front Range of the Rocky Mountains in Colorado, just outside of the Denver metropolitan area. With a population of 108,507, Boulder is the 12th most populous city in the state of Colorado. The city enjoys 300-plus days of sunshine a year and access to 60 urban parks within the city and over 150 miles of trails at the nearby Chautauqua Park. Boulder is home to the University of Colorado, which educates more than 30,000 students each year. Boulder is also well-known for its tech and natural food industries, federal research labs, and restaurants and shops lining the historic Pearl Street Mall.[91]

All these amenities make Boulder an incredibly attractive place to live and work. However, its population is only projected to grow to 123,000 by 2040—less than 1 percent growth annually. The demand to live in Boulder is best reflected in the city's high median detached home sale price, which was $855,000 in 2017 according the Boulder Realtor Association. Furthermore, the median household income in 2017 was equally high at $97,000 according to the City of Boulder's Department of Planning, Housing, and Sustainability. Boulder is overwhelming composed of people who identify as white with about 88 percent of residents identified as white in 2016. Asian residents comprised

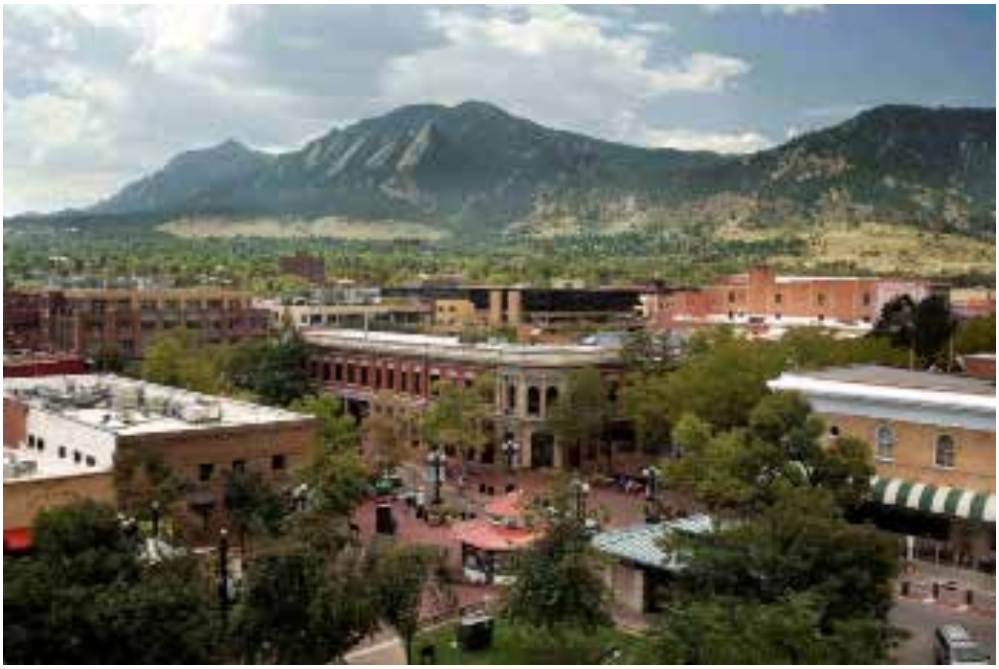


FIG. 22
View of Downtown Boulder
Source: (City of Boulder, 2019)

the second highest demographic at 5 percent of the population. Residents of Boulder also attain high educational rates with approximately 72 percent of residents 25 or older holding a bachelor's degree or higher in 2016. This is nearly twice the rate of the state of Colorado and 40 percent higher than the nation.[92] A summary of community characteristics for Boulder and Eugene, Oregon is provided below in Table 2.

Transportation System

Boulder features a balanced transportation system that provides residents and non-residents many travel options. As a result, high levels of people use non-automobile transportation modes. In 2011, 32 percent of trips involved walking, bicycling, and transit, which is exceptionally high relative to the national rate of 8.5 percent.[93] When examined separately, these non-automobile travel statistics are even more impressive: in 2012, approximately 10 percent of residents biked, 9 percent walked, and 9 percent took the bus to work compared to less than 1 percent, 3 percent, and 5 percent nationally, respectively.[94]

These travel mode splits place Boulder in the upper echelon of cities with robust transportation systems such as Portland, Oregon; Seattle, Washington; and Davis, California. The city is now widely recognized as an exemplar in promoting non-automobile travel.[95] It is no mistake that Boulder has been able to achieve these impressive outcomes. Boulder has a long history of using land use and transportation planning to ensure its goals are realized. The transportation system enjoyed by residents and visitors today is a fundamental part of the fabric of what Boulder is and how it functions. By continually striving towards a complete transportation network for pedestrians, bicyclists, and transit riders, Boulder offers many useful examples of how Eugene may improve its own system.

In Boulder, biking is viewed as a legitimate mode of travel rather than as a solely recreational activity. The Boulder Valley, which includes the city of Boulder and Boulder County, sports more than 300 miles of bikeway including 96 miles of bike lanes, 84 miles of multi-use paths, and 50 miles of designated bike routes.[96] The city also provides a bike-share service called the "Boulder B-Cycle" that operates 47 stations and 300 bikes. Within the downtown, B-Cycle has ten stations available (Boulder B-Cycle,

FIG. 23
Selected Community Characteristics, by City
Source: (U.S. Census Bureau, 2019) and (City of Boulder, 2019)

	Boulder, Colorado	Eugene, Oregon
Population	108,507	168,916
Population Percent Change (2010–2018)	9.9%	9.5%
Population Density	3,948.3 persons per sq. mi.	3,572.1 persons per sq. mi.
Land Area	24.66 sq. mi.	43.72 sq. mi.
Median Household Income	$97,000	$47,489
Bachelor's degree or higher, percent of persons age 25 years+	72%	31%

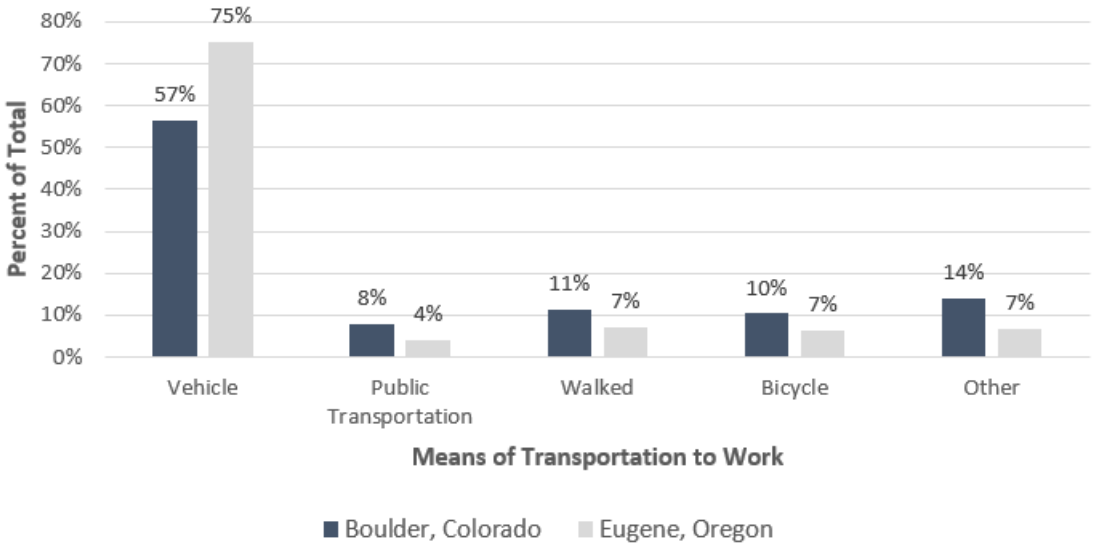


FIG. 24

Means of Transportation to Work, by City, 2017

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

2019). B-Cycle offers the option to pay per trip or purchase daily, monthly, or annual passes ranging in price from $8-$88.[97] This tiered pricing makes the B-Cycle program accessible and appropriate for all types of users (i.e. residents and visitors).

Boulder also has a comprehensive transit network providing express, local, and regional connections. Boulder's transit system, Community Transit Network (CTN), is owned and operated mainly by the Regional Transportation District (RTD). RTD is a public agency that provides public transportation in eight counties, including Boulder County.[98] Overall, RTD's services include bus, rail, shuttles, ADA paratransit services, FlexRide, and more. However, services are limited to local and regional bus and shuttle services within and to the city of Boulder.[99] RTD's Downtown Boulder Station functions as the city's major transit hub, serving the same number of bus routes as Denver's Union Station. The station is located within the downtown area, just a few blocks away from the Pearl Street Mall and University of Colorado Boulder. At rush hour, 420 passengers board buses at Downtown Boulder Station.[100] This local and regional connectivity provided by RTD directly to the downtown makes it highly accessible for both residents and non-residents. Once within the downtown, Boulder's CTN continues to provide alternative transportation options. The City has partnered with Via Mobility Services to operate the HOP bus route, which provides service between key centers within the city such as Downtown Boulder, the University of Colorado Boulder, and the 29th Street Mall. The HOP route operates in a loop from 7:00 am to 7:00 pm at 12-minute or 15-minute frequencies during weekdays and 15-minute or 20-minute frequencies during weekends. Riding the HOP is relatively inexpensive, costing just $3.00 for a three-hour pass.[101]

Downtown Boulder

While originally part of the hunting ground of the Arapaho tribe, Boulder and its downtown were first settled in 1859 by the Boulder City Town Company to serve as a supply center for miners going into the mountains

in search of gold and silver. From the beginning when a prospector laid out the straight line for the main street that would become Pearl Street, present downtown area has been the epicenter of activity. In fact, by the 1880s, this area developed into a bustling hub of commerce featuring restaurants, groceries, saloons, liquor stores, barbers, and tailors to name a few. This growth was spurred in part by the establishment of the University of Colorado nearby in 1876. Boulder, like many American cities at this time, also had a streetcar service that transformed the city and the downtown area around Pearl Street into a key regional center.[102]

Today, downtown Boulder is located on the western half of the city, directly north of Boulder Creek, and anchored by the Pearl Street Mall. The Pearl Street Mall is a four-block pedestrian mall that stretches from 11th Street to 15th Street along Pearl Street, as shown below in Figure 1. Popular destinations such as many locally-owned shops, breweries, bars, and boutiques operate along Pearl Street and throughout the downtown. The downtown serves as the stage for many street performers and musicians. Also found throughout the area are public art installations, fountains, sculptures, parks, and historic buildings. Nearly all of the buildings located adjacent to the Pearl Street Mall and nearby are historic structures. As a result, this area is designated as a Downtown Historic District. Buildings within this area must conform to the City of Boulder's Downtown Urban Design Guidelines.

MAJOR TRANSPORTATION-RELATED PLANS

The City of Boulder's transportation planning apparatus uses a wide array of planning documents that vary in scope and scale. Of the six main plans identified and reviewed for this report, two plans—Boulder Valley Comprehensive Plan (BVCP) (2017) and City of Boulder Transportation Master Plan (TMP) (2014)—carry particular significance by providing the foundation of the City's efforts. To provide context for the findings outlined in the next section, an overview of the plans and their transportation-relevant frameworks is provided below.

Boulder Valley Comprehensive Plan (BVCP)

The BVCP (2017) represents the seventh major update to the jointly adopted comprehensive plan for the City of Boulder and Boulder County. Since 1970, the two jurisdictions have used this collaborative process to provide guidance for land use decisions in the Boulder Valley. Broadly, the plan aims to protect the natural environment while "fostering a livable, vibrant, and sustainable community."[103] Furthermore, the plan applies a sustainability and resilience framework to ensure policies consider the environment, economy, and social equity together. In regard to

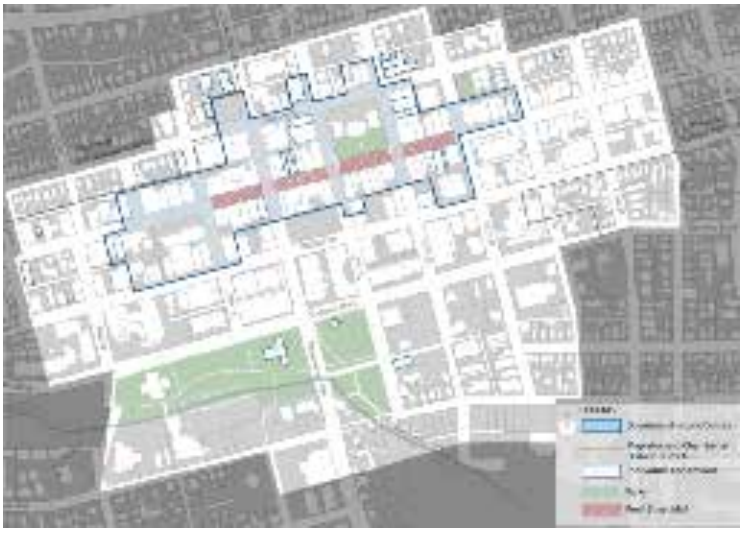


FIG. 25
Map of Downtown Boulder

transportation, the plan's vision states the community's commitment to "an all-mode transportation system to make getting around without a car easy and accessible to everyone".[104] The plan dedicates an entire section, Section 6, to transportation. The plan's transportation policies are divided into five focus areas: (1) Complete Transportation System; (2) Regional Travel; (3) Funding & Investments; (4) Integration of Land Use & Transportation with Sustainability Initiatives; and (5) Other Transportation Policies. The policies aim to create a transportation system that "accommodate increased person trips by providing travel choices and by reducing single-occupant automobile trips and vehicle miles traveled (VMT)."[105] The plan directly acknowledges this section reflects the City's and county's Transportation Master Plans.

City of Boulder Transportation Master Plan (TMP)

Most recently updated in 2014, the City of Boulder's TMP is its blueprint for an accessible and connected community through 2035. The TMP contains goals, policy guidance, and measurable objectives for operating and investing in the city's transportation system. The TMP is set within the wider context of the BVCP and intended to ensure the transportation system supports community-wide sustainability and quality of life goals. In addition, the TMP acknowledges the city's climate commitment of an 80 percent reduction in greenhouse gas emissions by 2050. Like the BVCP, the TMP's policies have five focus areas: (1) Complete Streets; (2) Regional Travel; (3) Transportation Demand Management (TDM); (4) Funding; and (5) Integrate with Sustainability Initiatives.[106] Shown below in Table 3 are the TMP's measurable objectives.

FIG. 26
City of Boulder Transportation Master Plan Measurable Objectives
Source: City of Boulder, 2014

Objective 1: Reduce vehicle miles of travel in the Boulder Valley by 20 percent by 2035
Objective 2: Reduce single occupant vehicle travel to 20 percent of all trips for non-residents and 60 percent of work trips for non-residents.
Objective 3: Achieve a 16 percent reduction in green house gas emissions and continued reduction in mobile source emissions of other air pollutants
Objective 4: No more than 20 percent of roadways congested at Level of Service (LOS) F
Objective 5: Expand fiscally-viable transportation options for all Boulder residents and employees, including older adults and people with disabilities
Objective 6: Increase transportation alternatives commensurate with the rate of employee growth "Toward Vision Zero" fatal and serious injury crashes: continuous improvement in safety for all modes of travel
Objective 7: Increase the share of residents living in complete neighborhoods to 80 percent Reduce daily resident VMT to 7.3 miles per capita and non-resident one-way commute VMT to 11.4 miles per capita

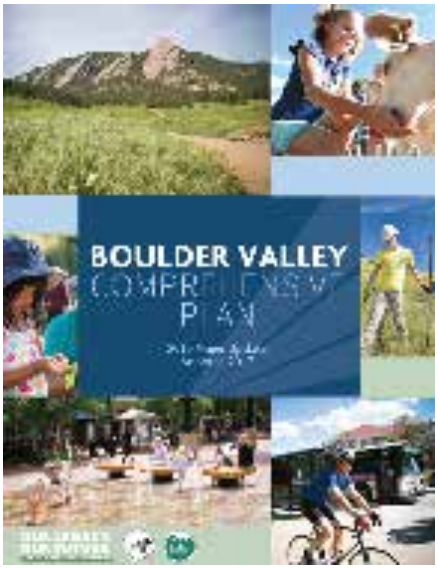


FIG. 27
Boulder Valley Comprehensive Plan

FINDINGS

This subsection provides a summary of tools and approaches Boulder uses to address sustainable transportation, travel demand management, and parking.

Sustainable Transportation

Boulder's sustainable transportation strategies are focused on expanding availability, enhancing the experience, and incentivizing sustainable travel habits such as walking, biking, or using public transit. In addition to the social, environmental, and economic benefits of achieving this strategy, the City's greenhouse gas emission targets serve as a further impetus. The first focus, expanding availability, is generally addressed by policies and programs intended to create a complete, connected transportation network for all modes (e.g. walking, biking, and transit). The second focus, enhancing the experience, is addressed by policies and programs focused on making user-oriented enhancements to existing transportation infrastructure. The third focus, incentivizing sustainable travel, is addressed by programing intended to educate and encourage people to use sustainable modes of transportation. Overall, the City's multifaceted sustainable transportation strategy achieves a balance between reconciling existing conditions, acknowledging the importance of engagement, and planning for the future.

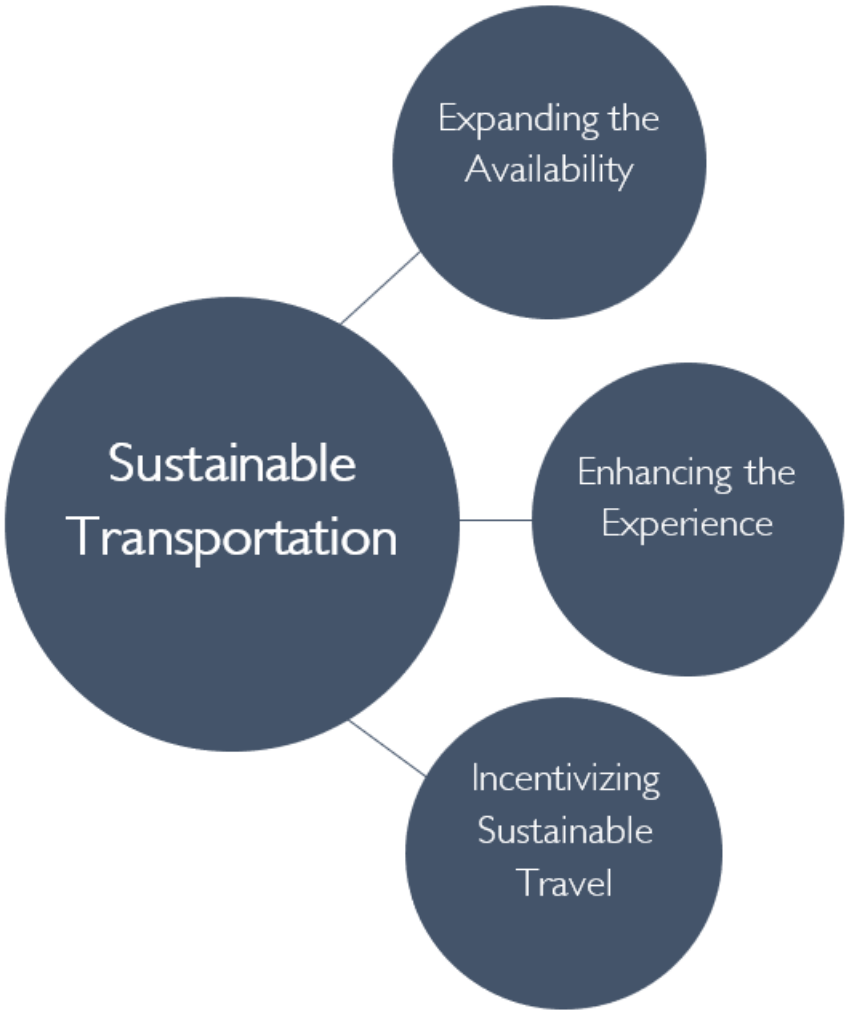
Expanding the Availability of Sustainable Transportation

Expanding the availability of sustainable transportation options is a critical component to Boulder's sustainable transportation strategy. Without this fundamental capacity, the rest of its strategies would be undermined. Developing a well-connected, comprehensive transportation network is the foundation of Boulder's sustainable transportation strategy. As opposed to private automobile networks, a sustainable transportation network must be designed to be multimodal—the synergistic connections of walking, biking, and transit build upon one another to offer a viable alternative to the private automobile. The need for multimodality is acknowledged in the content and organization of the City of Boulder's plans and policies. Boulder provides broad, overarching policies guiding the expansion of the entire sustainable transportation system, as well as modal-specific policies.

General Strategy

Broadly, Boulder's overarching expansion strategies are its commitment to completing missing links, improving the mobility grid, incorporating enhanced design for all projects, integrating land use and transportation, and funding additional capacity for non-automotive modes. In acknowledgment of the importance of improving its existing network, it is Boulder's policy to "work to

FIG. 28



complete missing links throughout the transportation grid."[107] These "missing links" often present physical and perceptive barriers to sustainable transportation options serving as viable options. By completing these missing links, Boulder leverages its existing network and expands the availability of sustainable travel. Along the same lines, Boulder aims to improve walkability, bikeability, and transit access in parts of the city that need better connectivity and mobility. This policy is essential to completing the mobility grid throughout the city and is an important strategy to expand the availability of sustainable transportation to people not previously served.

While it is important to build upon existing infrastructure, it is equally important to ensure new and future development contributes to expanding the availability of sustainable transportation. Fundamentally, Boulder recognizes the inherent connection between land use and transportation. This connection is critical because without proper land use mix and densities nearby, transportation facilities will go underutilized. Overall, the City incorporates this connection into both its land use and transportation planning documents. For example, it is the City's policy that land use within and around the city's regional centers (e.g. Downtown Boulder) will support their function as mobility hubs for travel and transit services. Its strategy is not only focused on these significant centers, though—its scope extends to the entirety of the city. The City of Boulder guides the design

quality of new projects to incorporate transportation elements. Its "Enhanced Design for All Projects" policy outlines guidance for accommodating transportation connections—ensuring projects "...provide a complete network of vehicular, bicycle, and pedestrian connections both internal to the project and connecting to adjacent properties, streets and paths."[108]

Perhaps the most important component of its overall strategy is the funding priority Boulder places on expanding sustainable modes of transportation. Of the three levels of transportation investment priority listed in the BVCP, second priority is given "to capacity additions for non-automotive modes and efficiency improvements for existing road facilities that increase person carrying capacity without adding general purpose lanes."[109] This prioritization is highly important because it ensures the plans are substantive and funding is appropriately dedicated to work toward achieving goals and policies.

Mode-Specific Strategies

Boulder outlines strategies for expansion of the three main components of its multimodal transportation work—pedestrian, bicycle, and transit. Below is an overview of these strategies.

PEDESTRAINS: Boulder's pedestrian network expansion policies set the standard for pedestrian mobility and accessibility throughout the city. Further emphasizing the importance of its multimodal transportation network, it is Boulder's policy to develop a high-quality pedestrian environment as a foundation for the desired multimodal transportation system. One innovative tool Boulder uses to assess and analyze the state of its existing pedestrian facilities and plan for expansion is the Neighborhood Access Tool. The Neighborhood Access Tool demonstrates people's ability to walk to and from places necessary to meet daily needs. The tool is based on the concept of the 15-minute neighborhood, which asserts people should be able to reach all their daily needs within a 15-minute walkshed. The tool allows the city to evaluate how accessible certain areas are for pedestrians to inform investment and planning activities.

BICYCLE: Boulder's bicycle network expansion policies strive to create a "complete grid-based system of primary and secondary bicycle corridors to provide bicycle access to all major destinations and all parts of the community."

The city plans to achieve this complete grid largely through coordination and collaboration with other government agencies, developers, property owners, the University of Colorado, and Boulder Valley School District. By working with all these partners, they aim to ensure all "projects connect with and/or help to complete the corridor network."[111] One point of emphasis is that bicycle parking should be "oriented along the line of sight from external connections to areas near building entrances and other on-site destinations."[112]

To increase the availability and accessibility of bicycling, the city and the nonprofit Boulder B-Cycle launched a city-wide bike-sharing system in 2011. Through Boulder B-Cycle, Boulder residents, commuters, and visitors are provided an "environmentally friendly, financially sustainable, and affordable transportation option." [113] The bike-share program is one of Boulder's most effective tools available to increase

accessibility and expand sustainable transportation options.

TRANSIT: Boulder's transit network expansion policies are comprised of strategies to expand service/capacity and implement new infrastructure. To expand capacity, the City looks to follow-up on the success of transit stations such as the RTD downtown Boulder station by designing mobility hubs to provide high-quality bus and multimodal connections. While the City has significant control over the transit network within city limits, many services are provided by RTD. As such, collaboration with RTD and its other partners underpins the City's strategies. In particular, Boulder aims to develop performance agreements with RTD that ensure service hours gained through city-funded transit investments will be reinvested in Boulder. It is the City's policy to "improve and expand the high-frequency CTN."[114]

Enhancing the Experience of Sustainable Transportation

Enhancing the experience of sustainable transportation options takes Boulder's multimodal network to the next level. It is not adequate to simply provide connections and alternative travel options; the network must be a reliable, comfortable, and accessible experience. Otherwise, people will not shift away from private automobile usage, and sustainable transportation options will be seldom used. As previously stated, Boulder is working towards implementing a multimodal network. Therefore, the enhancements it makes to improve the experience of using the network must be tailored to each mode of transportation.

Mode-Specific Strategies

Boulder outlines strategies for enhancement of the three main components of its multimodal transportation work—pedestrian, bicycle, and transit. Below is an overview of these strategies.

PEDESTRAIN: For enhancing the pedestrian experience, Boulder emphasizes the goal of developing a high-quality pedestrian environment. Not only is it important that the pedestrian environment exist for all, but it must be of high quality. According the TMP, Boulder uses urban design and incorporates amenities throughout its pedestrian network to make it a safe, convenient, comfortable, and interesting environment. In addition, Boulder upholds the standard "that a wheelchair user can move safely and conveniently through the transportation system."[115] This gold standard ensures all pedestrians infrastructure is designed using Americans with Disabilities Act accessibility standards. Boulder also uses innovative programs such as community walkabouts and walk audits to identify areas where design elements can be incorporated to improve the walk-friendliness. These programs are critical tools the city uses to engage the community in planning processes and inventory areas where conditions can be improved.

BICYCLE: To enhance the bicycling experience, Boulder uses a combination of network evaluation tools, guidelines, and programs. Spurred by the reality that getting on a bike entails crossing busy streets and mixing with vehicular traffic, Boulder has set out to develop a low-stress bicycle network. The low-stress analysis evaluates the "stress level" of the existing bicycle network. By assessing the stress level, the

City is able to identify barriers and opportunities for enhancement. The goal of the low-stress bicycle network is "to attract a broader population of people (ages 8 to 80) as confident and comfortable cyclists." [116] Similar to this strategy is Boulder's intention to develop bicycle facility installation guidelines. The guidelines would standardize treatments and facilities across the city in a similar way its Pedestrian Cross Treatment Installation Guidelines already do. Lastly, the Living Lab Pilot Program allows the City to create temporary installations that offer the community the opportunity to test new bike treatments and determine if they are appropriate. This highly innovative program works directly with the community to identify areas needing improvement, test installations, and then either make them permanent or remove the treatments.

TRANSIT: To enhance the transit experience, Boulder focuses on improved services, infrastructure, and programming. In particular, it works to meet or surpass service level standards for the CTN—maintaining 10-minute peak and 15-minute off-peak service. To assist in meeting this goal, Boulder plans to design and implement bus priority improvements along CTN routes. Increasing the frequency and reliability of its CTN makes transit a more feasible and attractive mode of transportation. Again, Boulder also works to enhance service to older adults and persons with disabilities through the operation of its Via bus service. At the transit stops themselves, Boulder promotes urban design and development that supports all modes of travel and prioritizes transit stop improvements based on projected ridership. Perhaps the most significant enhancement Boulder will complete is the incorporation of real-time transit information into major transit centers, on the internet, and on mobile devices. This task will require collaboration with RTD and partners, but as a result will reduce time spent waiting for the bus and make transit more affordable and convenient.

Incentivizing Sustainable Travel Habits

Incentivizing sustainable travel habits such as walking, biking, or using public transit addresses the human component of the sustainable transportation equation. Providing a comprehensive, comfortable network will not automatically increase usage—people need to be made aware of and encouraged to use it. To achieve this, Boulder uses two main strategies: encouragement and education.

ENCOURAGEMENT: The City of Boulder believes the first step in shifting travel behavior is to promote active transportation and create awareness of travel options. Similar to the rest of its strategies, it promotes walking, bicycling, and transit in its encouragement strategy. Walking encouragement programs include Boulder Walks, which celebrates walking and local historic and cultural resources through community walkabouts. Biking encouragement programs include community-based social rides like Bike Month, Bike to Work, and Bike to School Days, all of which encourage people to bike and explore their city and help to familiarize people with their community's bike network. Transit encouragement programs include expanding transit-bicycle integration to allow for greater first- and last-mile connections.[117]

EDUCATION: The second step the city takes is educational efforts to create safer roads and pathways and to increase the comfort of using all modes. This strategy also focuses on walking, biking, and transit usage. Walking education programs include an etiquette campaign to raise awareness of multi-use path rights and responsibilities. Biking education programs are extensive. They include the Lighten Up Boulder Bike Light Campaign—which highlights the danger of riding at night without a bike light—and bicyclist rights and responsibilities outreach with local agencies and local bike shops. Transit education programs are comprised of providing informational tools like system maps and public information campaigns to highlight the benefits of taking transit.[118]

TRAVEL DEMAND MANAGEMENT

Travel Demand Management, sometimes referred to as Transportation Demand Management, promotes the efficient use of the transportation system by affecting the time, route, or mode selected for a trip.[119] Boulder's travel demand management (TDM) strategies focus on controlling the demand for automobile travel through incentives and disincentives. TDM is not a one-size fits all strategy. TDM strategies work best when there is a combination of mix and density of land uses and urban design integrated with a comprehensive transportation system. Within Boulder, two areas have been identified as meeting these characteristics—Downtown Boulder and Boulder Junction. When TDM strategies are successful, they can limit the increase in vehicle trips from existing and new development and help cities reach various climate, quality of life, and health goals.

Controlling Demand for Automobile Travel: Incentives & Disincentives

Controlling the demand for automobile travel throughout the city, and within the downtown in particular, are crucial to Boulder's ability to meet its stated TDM goals and objectives. To achieve this, Boulder uses a combination of incentives to make it easy and disincentives to get the price right. This combination is intended to "level the field relative to the many embedded subsidies for auto use."[120] One theme consistently found throughout Boulder's TDM strategy for

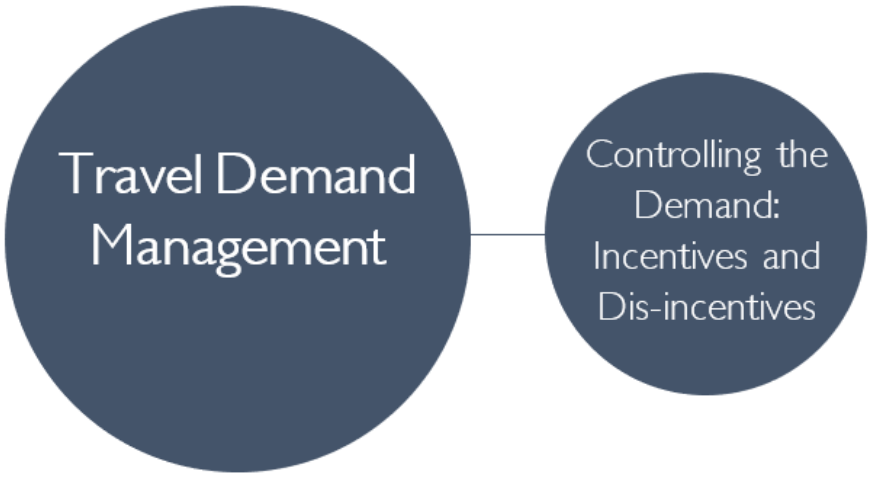


FIG. 29

controlling demand is its attempts to influence the financial aspects of travel, which is one of the most powerful influences on travel behavior. Perhaps, the most effective program Boulder uses to encourage alternative travel is the Eco Pass. The Eco Pass was developed in collaboration between the City and RTD. The Eco Pass is an annual, universal transit pass that is deeply discounted and only able to be purchased by an employer for employees, neighborhood groups, or the University of Colorado. The Eco Pass removes several barriers to transit usage such as out-of-pocket costs and paying cash fares. Conversely, Boulder uses disincentives such as price signals to show people the hidden costs of vehicle use. To minimize the amount of required parking, improve efficiency, and support mode shift, the City of Boulder developed the "SUMP" principles—Shared, Unbundled, Managed, and Paid Parking. These principles guide the City's parking management strategy, discussed at length below, and play a critical role in its TDM strategy. Boulder also ensures new development does not generate increased vehicle miles traveled and single-occupant vehicle trips through its requirement for TDM plans for applicable residential and commercial development. Developers must submit a performance-based plan showing the various TDM elements included in their proposal.[121]

PARKING MANAGEMENT

In most U.S. cities, parking availability, accessibility, and cost have historically been among the most heavily managed and regulated aspects of transportation. With anywhere from 60 to 80 percent of all trips being made by single-occupancy vehicles across the U.S., the ability to store the vehicle at their destination is a concern for many. After decades of auto-centric development to appease car users, downtown areas now have copious amounts of space dedicated to parking in multi-story garages and surface lots. The demand for more space to store vehicles continues to persist in areas with popular destinations. However, as previously mentioned, people and cities now acknowledge the negative impacts and unaccounted costs this habit generates. Therefore, Boulder has developed creative parking strategies to disincentivize parking usage, improve efficiency of existing parking, and minimize the impact of parking.

General Strategy

The foundation of Boulder's parking management strategy is its SUMP principles, which were developed to serve as guidance for its activities to "reflect the real cost of SOV travel."[122] To elaborate and apply the SUMP principles, Boulder then developed its Access Management and Parking Strategy (AMPS) in 2018. AMPS outlined a balanced approach to improved accessibility by increasing travel options. The strategy listed district management, pricing, technology, parking, code, and travel options as its six tools for change. This strategy, in conjunction with policies from the BVCP, serves as the main basis for parking management in Boulder.

Disincentivizing Parking Usage

To disincentivize parking usage within the downtown area, Boulder has used targeted policies and programs. One of the most noteworthy programs used was its "Parking Cash Out" program, which offers financial incentives to employees to use non-SOV commute modes. The program aimed to both reduce parking demand and ensure

benefits were distributed equally. Through the program, commuters were provided the opportunity to either keep an employer-subsidized parking spot or accept the approximate cash equivalent of the parking and the use of an alternative transportation option. Another program Boulder has used is Door to Downtown (d2d), which provided door-to-door access to and from downtown Boulder using Transportation Network Companies (TNC) Uber and Lyft. This program was piloted in 2016 with the goals of reducing Downtown Boulder's parking demand and encouraging customers to explore new ways of accessing downtown Boulder.[123]

Improving the Efficiency of Parking

To improve the efficiency of parking, it is Boulder's policy to "accommodate parking demands in the most efficient way possible" by minimizing new spaces and promoting parking reductions.[124] This component of the strategy is largely undeveloped. Existing parking efficiency strategies are notably absent in the city of Boulder. However, the City is currently conducting extensive planning and research to identify policies, programs, and actions. Some of these next steps include parking code changes to reflect the actual parking supply and demand, multimodal goals for the TMP, decreasing the number of parking reductions that are requested, and pursuing data-driven management to improve system efficiency and share information effectively.

Minimizing the Impact of Parking

Minimizing the impact of parking is of particular importance in key centers like downtown Boulder. To achieve this, Boulder states that the primary focus of any site should be quality site design, not parking. The city goes further to say that parking should play a subordinate role to site and building design, be integrated between or within buildings, and be compact and dense. The placement of parking is also encouraged to be behind and to the sides of buildings instead of on large street-facing lots. Boulder is also looking to a future where parking demand is lower. Its policy encourages parking structures designed with flexibility to allow for different uses in the future. By influencing the placement and design of parking, Boulder minimizes the negative impact it has on the vitality of places.

BOULDER'S STRATEGY'S PERFORMANCE

This section provides an overview and analysis of transportation trends in the city of Boulder to assess the overall effectiveness of its sustainable transportation, TDM, and parking management strategies.

Progress Towards Objectives

The City of Boulder collects and analyzes data relating to each of its TMP objectives to track progress. A snapshot of this data is provided online on the city's website (https://bouldercolorado.gov/boulder-measures). In addition, a Transportation Report on Progress (TRP) is published every two years. The most recent TRP was published in 2018 and served as the major source of information to evaluate Boulder's transportation strategies. As shown in Figure 30, a report card for TMP objectives is included in each TRP. The report card shows the TMP's measurable objectives, its progress, and whether the objective was met or not.

Overall, Boulder met five of its nine measurable objectives. It is important

Objectives	Progress	Performance
Reduce vehicle miles of travel in the Boulder Valley by 20 percent by 2035	VMT was last estimated at 2.49 million in 2016	X Objective Not Met
Reduce single occupant vehicle travel to 20 percent of all trips for non-residents and 60 percent of work trips for non-residents.	Resident SOV mode share was 36% in 2015 Non resident SOV mode share was 78% in 2017	✓ Objective Met ✓ Objective Met
Achieve a 16 percent reduction in green house gas emissions and continued reduction in mobile source emissions of other air pollutants	448,994 million metric tons of transportation related GHG in 2016	X Objective Not Met
No more than 20 percent of roadways congested at Level of Service (LOS) F	11 percent of signalized intersections at LOS E or F in 2017	✓ Objective Met
Expand fiscally-viable transportation options for all Boulder residents and employees, including older adults and people with disabilities	2017: 311,00 city support to VIA 2017: 11,298 est. residents eligible for Neighborhood EcoPass	✓ Objective Met
Increase transportation alternatives commensurate with the rate of employee growth	Boulder Employees: 18% increase Transit Service Hours: 10% Decrease Bike System Miles: 30% Increase	✓ Objective Met
"Toward Vision Zero" fatal and serious injury crashes: continuous improvement in safety for all modes of travel	66 serious injury and fatal crashes in 2016	X Objective Not Met
Increase the share of residents living in complete neighborhoods to 80 percent	29 percent of residents lived in a walkable neighborhood in 2017	X Objective Not Met
Reduce daily resident VMT to 7.3 miles per capita and non-resident one-way commute VMT to 11.4 miles per capita	12.8 miles per day for Boulder Residents in 2015 Estimated 15 miles for a nonresident one-way commute in 2017	X Objective Not Met

FIG. 30
Transportation Master Plan (2014) Objectives Report Card, 2018[125]

to understand that the planning horizon for the TMP was 20 year, or until 2035, so failure to meet an objective in 2018 does not necessarily mean a strategy was ineffective. Several insights can be gleaned from this assessment. First, Boulder's unmet objectives are those that show tangible end-product results in behavior change or transportation impact change. For example, Boulder did not meet its objective of reducing vehicle miles of traveled by 20 percent. VMTs have actually increased slightly since 1990. Given this, it is not surprising that Boulder also has not yet met its greenhouse gas emission reductions. However, there are areas where significant progress has been made. One such example is the city's ability to reduce SOV mode share for residents to 36 percent in 2015 from 44 percent in 1990. However, the same trend is not as strong for non-resident SOV mode share, where figures have decreased to 78 percent in 2017 from 81 percent in 1991. These varied and conflicting progress statistics show the myriad of complex relationships at play that determine the success or failure of Boulder's—or any city's—transportation system.

HIGHLIGHTS

While the big picture results are mixed, several programs and policies in Boulder show clear success. The section below provides a detailed overview of such strategies.

Eco Pass

The Eco Pass Program is one of Boulder's most effective TDM programs. In fact, a sensitivity analysis conducted shows it is one of the most cost-effective tools the City uses to increase transit ridership. Eco Pass holders are five to nine times more likely than non-Eco Pass holders to ride transit. Since its introduction in 2015, it has successfully helped change travel behavior for around 80,000 people. As previously mentioned, the Eco Pass Program is a discounted annual, universal transit pass that is purchased by employers for employees, neighborhood groups, and the University of Colorado for students and staff. Overall, the Eco Pass program has been incredibly well-received by both purchasers and users. When the program began in 2015, 75,599 people used it. By 2017, the number of users had increased by 6,706 users or 8 percent to 82,305, as shown in Figure 31. Significantly, 18 percent of the growth experienced during that time period was driven by business participation. Close behind was neighborhood group participation, which grew 13 percent. The largest user group of the Eco Pass program is by far University of Colorado, Boulder—including students, faculty, and staff—which combined accounted for 52 percent of users (City of Boulder, Colorado, 2018). Given all this success, Boulder is exploring the feasibility of expanding eligibility for the program by making it community-wide.

Neighborhood Access Tool

Boulder's Neighborhood Access Tool (NAT) is an important analytical tool that provides an objective assessment of the degree to which residents live in "15-minute walking neighborhoods." The NAT helps Boulder assess whether it is meeting TMP Objective 8 (Increase the share of residents living in complete, walkable neighborhoods to 80 percent). The power of this tool is its ability to synthesize the concepts of sustainable transportation, TDM, and compact/mixed development. The inherent overlap between land use mix, densities, and transportation facilities

Program	2015	2016	2017	Percent Change (2015 to 2017)
College Pass Program	32,945	34,235	34,735	5.2%
CU Faculty and Staff	7,914	8,286	8,684	8.9%
CAGID Downtown Program	6,613	6,702	6,864	3.7%
UHGID University Hill	0	383	343	100.0%
Boulder Junction Business	68	96	689	90.1%
Boulder Junction NECO	303	423	417	27.3%
Business Program BECO	16,137	17,191	19,275	16.3%
Neighborhood Program	11,619	11,709	11,298	-2.8%
Total	75,599	79,025	82,305	8.1%

FIG. 31
Eco Pass Estimates, 2015-2017
Source: (City of Boulder, Colorado, 2018)

makes showcasing the concept of a 15-minute neighborhood incredibly useful. In Boulder, the NAT works using GIS to create "access scores" for areas that represent the ability to walk to various destinations. Access scores were created when the TMP was updated in 2014 and again in 2017. Over that time period, slight improvement was observed in areas where additional mixed-use development had occurred. In 2017, 29 percent of Boulder residents lived in walkable neighborhoods.[126] While this is significantly below its objective of 80 percent of residents, the ability of the tool to objectively benchmark and continuously measure this attribute is noteworthy. This type of analysis can easily be tracked over time and incorporated into other planning initiatives.

Seattle, Washington

Washington State, like Oregon, has a comprehensive statewide land use planning system, although some contend that the Growth Management Act (GMA) in Washington is less rigorous. Seattle has enacted its Comprehensive Plan, *Seattle 2035*, in accordance with the GMA.

There are dozens of Implementation Tools; this report focuses particularly on *Move Seattle*.

Move Seattle

In 2015, Seattle voters approved a 10-year, $895 million levy to fund Seattle's "Move Seattle" 10-year strategic transportation vision. The overall plan for Move Seattle is to make the downtown area interconnected with neighborhood districts throughout the city. It also calls for major infrastructure maintenance and repair, as well as smaller design details that promote safety, efficiency, and accessibility.

This initiative has set forth the following goals aimed at making Seattle a fully accessible, safe, and sustainable transportation city:

1. Repair, replace, and operate bridges to support safe travel and seismic resiliency
2. Repair sidewalks and support healthy tree growth in areas of high pedestrian demand to enhance safety and support walkable neighborhoods
3. Repair damaged residential sidewalks through innovative cost-sharing solutions to support walkable neighborhoods
4. Evaluate and address safety concerns and crash locations quickly and effectively
5. Implement safety programs along corridors with high levels of crashes
6. Improve safety in school zones
7. Improve pavement markings, replace aging signs and add lighting to enhance visibility and increase safety
8. Build the core citywide grid of protected bike lanes and neighborhood greenways
9. Provide education programs to help pedestrians, bicyclists and motorists travel safely and efficiently
10. Repair damaged or closed public stairways to connect neighborhoods and improve accessibility
11. Identify and fix failing retaining walls and minimize landslides to protect public infrastructure and private property

The architects of Move Seattle have segmented out these broader goals in to more succinct short-term goals to be achieved over the next three years. These goals include:

Roll out a coordinated Vision Zero program:

- Implement 20 mph speed zones in residential areas on a neighborhood-by-neighborhood basis, starting with areas with the highest crash rates

FIG. 32
Growth Management Diagram

- Reduce arterial speed limits to 30 mph or lower to improve safety
- Create a traffic safety education kit for community groups and schools to promote road safety and Vision Zero
- Partner with Seattle Police Department to conduct routine enforcement in areas with high crash rates

Build out an all ages and abilities bike network:

- Build up to 50 miles of the highest priority protected bike lane segments connecting to and through downtown and new neighborhood greenways to improve pedestrian and bicycle travel to and through our neighborhoods

Repair critical infrastructure to increase safety

- Repair up to 25 blocks of damaged sidewalk each year
- Begin seismic retrofit of Seattle's remaining unreinforced bridges
- Rehabilitate up to five stairways each year

Prioritize pedestrians

- Make the 27 percent of the city without sidewalks more walkable by constructing up to 30 new blocks of sidewalks connecting to transit stops and community centers and identifying new funding tools and partnerships to increase sidewalk construction
- Use high-reflectivity crosswalk markings on all projects
- Modify signal timing to favor pedestrians in neighborhood business districts
- Install up to 25 pedestrian countdown signals each year
- Help employers develop walking programs for employees in Seattle's most walkable neighborhoods

Seattle Examples

While Move Seattle is a massive and wide-scale investment for the entirety of the city, there are dozens of smaller transportation projects that aim to bolster transportation exclusively within the downtown area.

One such project is the Pike/Pine Complete Street. The Pike/Pine Complete Street adds protected bike lanes, transit amenities, improvements to the pedestrian realm, improves transit speed and reliability, and increases efficiency for all modes.

To increase mobility within the Pike/Pine Complete Street Corridor the following actions are taken:

1. Prioritize pedestrians within Seattle's complete streets hierarchy
2. Selectively convert one-way streets to two-way
3. Lower the downtown speed limit
4. Widen sidewalks where needed
5. Raise sidewalks where possible
6. Implement the bicycle master plan
7. Implement the Center City Connector streetcar
8. Update pedestrian/traffic signals to favor and protect pedestrians
9. Implement the bike-share program

From a design perspective, the City of Seattle plans to achieve these outcomes by approaching transportation design as a multi-layer process. It has identified three tiers of street design to increase multi-mobility modes:

The Light Layer: aesthetics and functionality for events and day-to-day activities

The Middle Layer: pavement-fixed furnishings

The Deep Layer: fundamental allocation of the right-of-way space among pedestrians, transit, bicycles, trucks, and cars

Seattle is taking a joint approach to transportation and land use planning as the two are so intertwined. In order to make the most out of a limited resource, the City is creating new ways to think about their resources. One important example is the rethinking of how the curb space is used, leading to their Flex Zones program.

Flex Zones

To get the most use out of pavement, the City of Seattle has implemented curb use priorities for its streets, otherwise known as Flex Zones. Flex Zones are the flexible space between the streets and sidewalks where people find their bus, park a car, hail a cab, drop off a passenger, or make a delivery. This space can also be dynamically structured given surrounding land uses and intensity of use. Flex Zones can also be structured in accordance with desired function of the space throughout the day. The City of Seattle has identified six different functionalities of Flex Zones:

Mobility—Moves people and goods
- A Sidewalks
- B Bus or streetcar lanes
- C Bike lanes
- D General purpose travel lanes (includes freight)
- E Right- or left-turn only lanes

Access for People
- A Bus or rail stops
- B Bike parking
- C Curb bulbs
- D Passenger load zones
- E Short-term parking
- F Taxi zones

Access for Commerce—Goods and services reach their customers and markets
- A Commercial vehicle load zone
- B Truck load zone

Activation—Offers vibrant social spaces
- A Food trucks
- B Parklets and streateries
- C Public art
- D Street festivals

Greening—Enhances aesthetics and environmental health
- A Plantings
- B Boulevards
- C Street trees
- D Planter boxes
- E Rain gardens and bio-swales

Storage—Provide storage for vehicles or equipment
- A Bus layover
- B Long-term parking
- C Reserved spaces
- D Construction

The City of Seattle has identified varying priorities of these uses given the surrounding land uses (Figure 33). Using the above matrix in conjunction with the functionalities of the Flex Zones, city staff can determine what the best uses are for the surrounding land uses of the area in question.

SEATTLE SUMMARY

Seattle has a multitude of plans and policies that implement the goals

	Residential	Commercial & Mixed Use	Industrial
1	Support for Modal Plan Priorities	Support for Modal Plan Priorities	Support for Modal Plan Priorities
2	Access for People	Access for Commerce	Access for Commerce
3	Access for Commerce	Access for People	Access for People
4	Greening	Activation	Storage
5	Storage	Greening	Activation
6	Activation	Storage	Greening

FIG. 33
Seattle Priority table by land use

outlined in their comprehensive plan, Move Seattle being the most applicable for this discussion. The next section discusses the adaptability of Move Seattle policies to Eugene.

Application of Seattle Policies and Programs to Downtown Eugene

Seattle is a very different city than Eugene. As indicated in Table I, Seattle is more populous, with higher density and median household income as well as higher median house values. This being said, there are still programs and policies that could help make Eugene a more livable community and reduce automotive dependence in the downtown area. The following section outlines ideas that could translate to fit Eugene's vision while retaining the character of Eugene that many of its residents cherish. To inform the future of Eugene, the City and residents are in the process of creating Envision Eugene, a comprehensive plan that aims to create a desirable and prosperous Eugene. Envision Eugene is supported by the following Seven Pillars:

Economic Opportunities

- Affordable Housing
- Climate Change and Energy Resiliency
- Compact Development and Efficient Transportation Options
- Neighborhood Livability
- Natural Resource Preservation
- Adaptable Implementation

Viewing Seattle's programs and policies in consideration of Eugene's guiding plans, we have crafted unique recommendations that strive to improve Eugene's Downtown: transportation/ parking management and land use/ urban design.

TRANSPORTATION AND PARKING MANAGEMENT

Reclaim the Curb

Historically cities have been allocating curb space for a purpose that can make the most revenue for cities: parking. Without changes in city policy, one study found that on-street parking occupancy will decline 12 percent for each 1,000 additional trips taken by transportation network companies (TNC).[127] In the long run this can have

a detrimental effect on local revenue unless the city takes proactive steps towards reclaiming their curb space. Curb space is used for everything from parking, deliveries, food trucks, parklets, and mobility sharing options.

Seattle has been piloting Flex Zones throughout its downtown area. During the morning and evening rush hours the area is reserved for drop-off or pick-up for rideshare, during the majority of the day the area is reserved for commercial delivery, and overnight the space can be used for parking or other uses. This policy shows that the City recognizes the multitude of uses the same curb face can have over the course of a single day.

This policy can be applied to Eugene in a similar manner. For example, the parking surrounding the downtown Kesey Square area can be adjusted in a similar manner to represent actual daily uses of the area instead of always being used for parking. Note that a project like this does not require a complete block of parking to be removed, but rather two or three spots to allow for easy pick-up and drop-off of TNC passengers. The ability to be safely be dropped off on the block of one's' destination may also entice some current drivers to take a TNC service downtown.

Flex Zones also improve safety and traffic flow in one-lane areas, such as Broadway Street. By allowing a vehicle to pull into a parking space, both vehicles and bicycles can continue their journeys instead of coming to a standstill.

Flex Zones can be an effective way to manage curb space in the changing transportation environment, but promoting efficient modes of transportation, such as transit, can also have a strong influence in a reduction for curb space.

Emphasize Public Transportation

Seattle has grown rapidly and as a result has been forced to find innovative ways to discourage the

FIG. 34
Community Climate Recovery Ordinance Goals

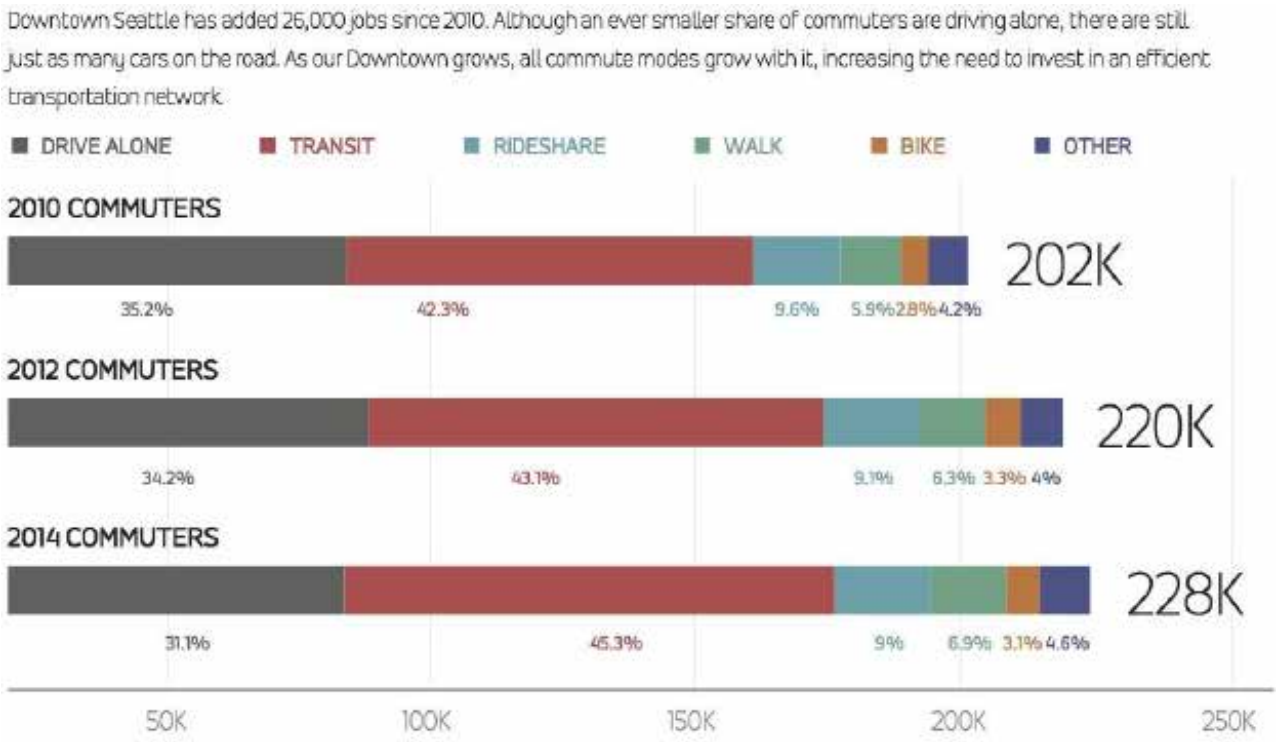


FIG. 35
Commuter Mode Share

use of single occupancy vehicles and promote mass transit.

Accordingly, Seattle has consistently increased its bus ridership over the past decade, being only one of a few U.S. cities to do so. Eugene, along with Lane Transit District (LTD), can promote bus ridership using effective proven methods from Seattle. Not only would a ridership increase lower the number of cars driven daily to and from the Downtown district thereby reducing parking demand and supply, it would also help the City of Eugene meet its Climate Recovery Ordinance (CRO).

Two primary ways Seattle has increased its bus ridership are by making it quick and convenient. The City has recently developed its first Bus Rapid Transit (BRT), which Eugene already has. The City also prioritizes bus transit at many intersections, giving the bus a bulb-out at the intersection coupled with an advanced signal that allows the bus to process through the intersection without having to merge with vehicle and bicycle traffic. This is an idea that could translate well to Eugene, especially in its downtown core.

Even though 26,000 jobs have been added in the downtown Seattle core since 2010, the number of cars on the road has remained constant. Much of the new commuters are choosing to use transit to reach their destination as referenced by Figure 35.

Increasing bus ridership cannot occur independently, but rather must occur in conjunction with projects that would decrease the supply and demand of parking in Downtown.[128]

One of Move Seattle's policies is to provide 72 percent of Seattle residents with 10-minute all-day transit service within a 10-minute walk of their homes. Even though Seattle is more densely populated than Eugene, Eugene could strive for a similar goal. A predictable and frequent transit line would entice ridership thereby reducing the demand for parking (both on- and off-street) in

downtown Eugene. This would have the potential to free land area that can be used for more appropriate land uses than parking.

Eugene and LTD are currently partnering on the MovingAhead project that seeks to add features to select transportation corridors to better connect people with their destinations. Already having this program in the works is the first step, but the approach must seek to create corridors for all modes of transportation, not only bus. Like Seattle, Eugene could look to commuter nodes within the city when determining where to place new, or increase frequency of, transit services.

PARKING

Both Seattle and Eugene manage all of the on-street parking within their respective city limits, and this control holds a great opportunity to activate former parking spaces for pedestrian use.

Currently, Eugene has installed some smart meters that enable people to use technological devices, in addition to traditional methods, to pay for parking. The City is also progressing to a system that will represent real time data of how many parking spaces are available at any time. These technologies bring efficiency to Eugene parking but do not necessarily address the underlying policy that is outdated for the current transportation and land use landscape.

Seattle has a few interesting programs relating to parking that could be adapted for Eugene.

Restricted Parking Zone Program (RPZ)

Seattle has enacted an RPZ program to balance the needs of the community with those who want to use the parking space. RPZs are residential areas around commuter traffic generators—like hospitals or light rail stations—where on-street parking is restricted for those except residents and short-term visitors.

If Eugene adopted a program similar to this, it could help prevent commuters from driving into the city and parking their cars on the street for the workday when there could a better use for that same street space. Restricting use of this right-of-way requires a compelling reason. In this case, it is to prioritize residential and short-term visitor parking over commuter parking in the public right-of-way.[129]

Performance-Based Parking Pricing Program

Seattle has a program that aims to maintain one to two open parking spaces on each block face at all times by using annual data to adjust future rates. This program aims to deter parking in the right-of-way by charging a higher price for the same parking spot at different times during the day.

A program like this could be used in Eugene, especially in the downtown area by charging higher prices in during higher demand times of day. The funds could in turn be used for infrastructure improvements that would assist activation of the street by pedestrians.

One concern with any pricing scheme is equity. If the City of Eugene were to move forward with this plan, a discussion about creating a parking waiver or similar program that would not disproportionately affect low-income parkers would be encouraged.

ALTER THE APPROACH TO TRANSPORTATION PLANNING

As mentioned earlier, Seattle has categorized their transportation planning into various levels that designate the severity and longevity of projects: the Light Layer, the

Middle Layer, and the Deep Layer. This characterization of transportation infrastructure change may not necessarily make the process less onerous, but it does show a coexistence of priorities on behalf of the cities. It also gives an indication that elements of the Light Layer can be switched more rapidly than the Deep Layer. This shift could be replicated in Eugene transportation planning, but it is more of a reframing of a similar issue than a particular policy or program.

Improve Downtown Street Safety (Vision Zero)

The area surrounding intersections has a great impact on the safety of the given intersection. A safe street environment will encourage people to visit the downtown area and thereby increase overall activity downtown. Seattle prioritizes pedestrians as part of their Move Seattle program through initiatives including:

- Making the 27 percent of the city without sidewalks more walkable by constructing up to 30 new blocks of sidewalks connecting to transit stops and community centers and identifying new funding tools and partnerships to increase sidewalk construction
- Using high-reflectivity crosswalk markings on all projects
- Modifying signal timing to favor pedestrians in neighborhood business districts
- Installing up to 25 pedestrian countdown signals each year
- Helping employers develop walking programs for employees in Seattle's most walkable neighborhoods
- Reducing speed limits in pedestrian activity areas

Eugene can implement similar changes, albeit at a slower rate unless a funding source can be attained. Changing speed limits can have a significant impact on perceived and actual safety in a downtown area. Unfortunately, only reducing a speed limit may not help; there must also be constant enforcement of the speed limit.

The City of Eugene has recently implemented a Vision Zero program to increase the safety of its transportation systems. Vision Zero is an approach to transportation safety that accepts "no loss of life or serious injury on our transportation system."[130] There are many potential projects that can be used to increase safety including, but not limited to lighted crossings and lower speed limits.

ENCOURAGE APPROPRIATE LAND USES

Nodal Centers

Seattle has taken a comprehensive approach to develop its land uses by creating multiple districts that promote different, distinct activities. The districts are as follows:

Urban Centers: These are considered the densest Seattle neighborhoods. These Centers act as regional centers and local neighborhoods that offer a diverse mix of uses, housing, and employment opportunities.[131]

Hub Urban Villages: Communities that offer a balance of housing and employment but are less dense than urban centers. These areas provide a mix of goods, services, and

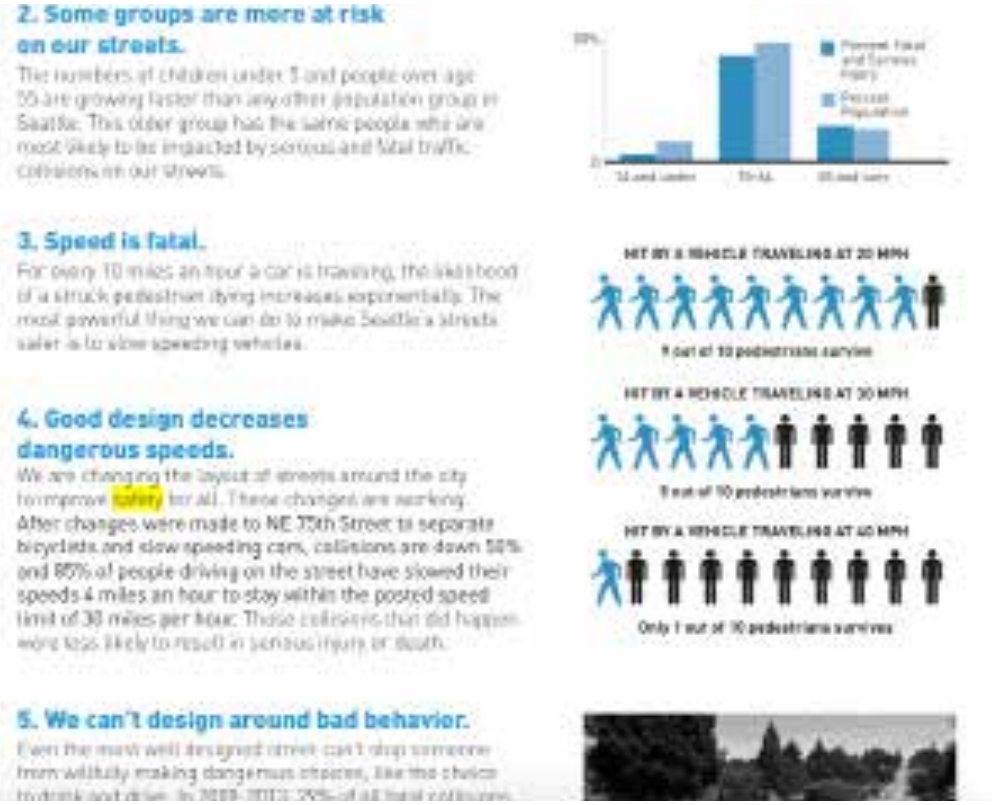


FIG. 36
Pedestrian Fatality

employment for their residents and surrounding neighborhoods.[132]

Residential Urban Villages: Areas of residential development, at lower densities than urban centers or hub urban villages. While they are also sources of goods and services for residents and surrounding communities, they do not offer many employment opportunities.[133]

Manufacturing/Industrial Centers: Home to the city's thriving industrial businesses. Like urban centers, they are important regional resources for retaining and attracting jobs and for maintaining a diversified economy.[134]

Downtown Eugene would be akin to an Urban Center. The purpose of an Urban Center is to locate more residents, jobs, stores, and services in close proximity can reduce the reliance on cars for shopping and other daily trips and decrease the amount of fossil fuels burned and the amount of greenhouse gases emitted. Increasing residential and employment densities in key locations makes transit and other public services convenient for more people and therefore makes these services more efficient.[135]

Complete Streets Initiative

The City of Seattle Department of Transportation (SDOT) has made a strong initiative to design streets for pedestrians, bicyclists, transit riders, and persons of all abilities while promoting safe operation for all users, including freight. All projects are examined through this lens. Seattle uses a data-driven approach to administer its complete streets program. Seattle defines Complete Street as "[These] often provide improved crossings, good lighting and sidewalks for pedestrians; bicycle

lanes, sharrows or wide outside lanes for bicyclists; adequate lane width for freight and transit operation; convenient transit stops for transit riders; and street trees, landscaping and other features such as improved lighting that make streets good for community life."[136]

To begin with, every project over $500,000 must complete a "Complete Streets Checklist." SDOT uses this tool to collect data and information about the status of the street and surroundings, as well as the details of the project, with a goal of identifying specific improvements that can be incorporated into the project to balance the needs of all users.

Eugene has a complete streets design guide, but it does not have a "Checklist" as Seattle does. This is a document that could be included as part of the application process. Seattle also maintains an online Complete Streets Review Story Map that enables viewers to see where and when projects have been completed and what improvements were made at that time. This is a GIS-based map that allows for easy updating. A similar program could be utilized in Eugene and could be used as a promotional tool to share new complete streets.

FIG. 37

Bellingham, Washington

Bellingham is located in northwest Washington with a population of approximately 83,580 people. Bellingham offers a vibrant small city life with a variety of places to live, work, shop, and recreate. Bellingham is about 28 square miles and located within Whatcom County. The city provides about 40 percent of the county's population and approximately two thirds of its jobs.

Bellingham prides itself on its excellent schools and picturesque natural setting. Located on the Puget sound and west of the northern Cascade mountain range, Bellingham attracts a diverse community. Due to its proximity to natural features, the residents of Bellingham value ecological sustainability and protection.

Bellingham historically underwent a 1 to 2 percent annual growth rate between the years of 1950 and 1995. From 1995 to 2015, Bellingham experienced an increase in population from 67,825 to 83,580 or about 23 percent. Residential development is the dominant land use within Bellingham's city limits with 54 percent of residential zones being single-family. The major employers within Bellingham include PeaceHealth St. Joseph, Western Washington University, and the Bellingham School District. Figure 38 is a 2015 Bellingham snapshot.

Bellingham has a larger millennial population in comparison to Whatcom County, which has a larger baby boomer population. It is predicted that the city of Bellingham will be getting older over the next 20 years as millennials enter their 40's and above. The population of Bellingham is continuing to diversify, although the majority of the population iswhite.

Downtown Bellingham Context

Downtown Bellingham occupies 249 acres along the Puget Sound waterfront harbor. Since 1989, downtown Bellingham has been a targeted location for strategic planning efforts. Downtown Bellingham has experienced building booms, retail exodus, and an evolution from a solely business district to a multi-use neighborhood. Downtown Bellingham currently provides jobs, housing, entertainment, and services that accommodate a diverse and growing population.

In 2013, there were approximately 7,565 jobs within the office, retail, government, and industrial sectors throughout Bellingham's downtown.[137] It is estimated that by 2036 there will be an increase in downtown employment to approximately 8,410. There are approximately 3.7 million square feet of developed space allocated for employment within an expected development increase of 40,000-60,000 square feet before the next planning period.[138] This will increase the amount of people coming to downtown for employment and increase the need for applicable transportation planning.

Bellingham advertises downtown as "everyone's neighborhood." The City of Bellingham has monitored the implementation strategies that they

FIG. 38

2015 Bellingham Demographic Snapshots

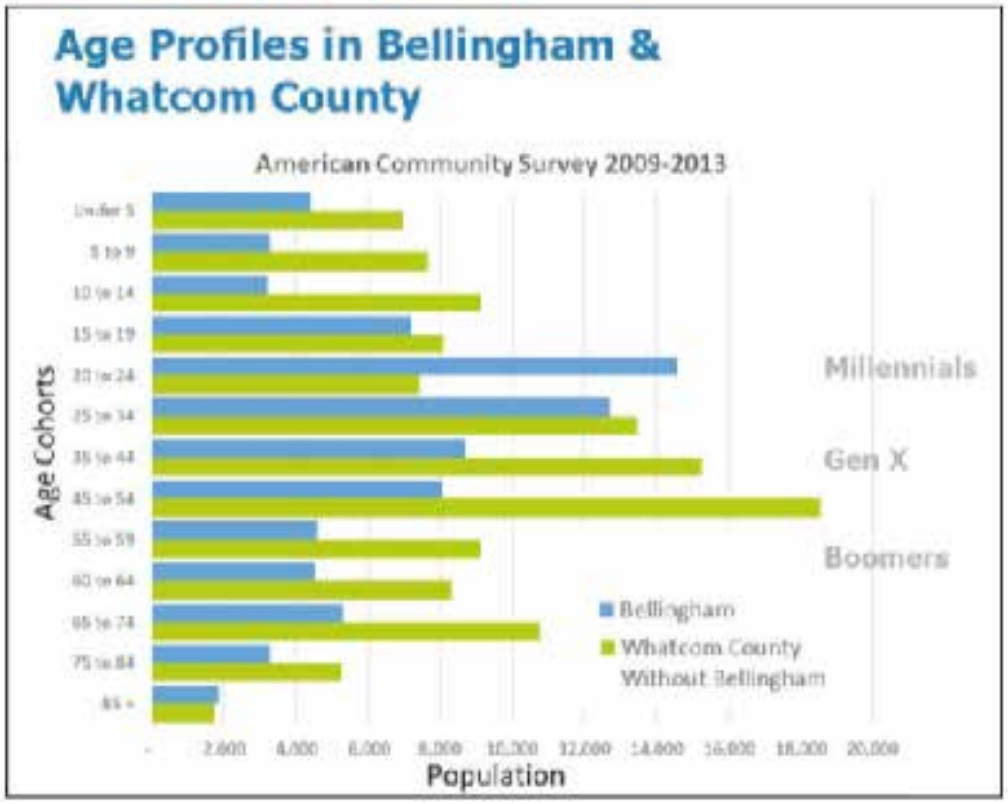
Source: City of Bellingham Comprehensive Plan

Bellingham Profile - 2015	
Population	83,580
Area in Square Miles (City Limits)	28
Miles of Paved Road	350
Acres of Parkland	2,776
Miles of Trails	75
Number of Schools (K-12)	21
Colleges and Universities	3
College and University Students	17,600
Total Employment	48,800 jobs
Rank in Employment (WA Cities)	11
TOP 10 MAJOR EMPLOYERS	PeaceHealth St. Joseph Medical Center Western Washington University Bellingham School District City of Bellingham Whatcom County Fred Meyer Zodiac Interiors Matrix Service Inc. T-Mobile Bellingham Technical College

FIG. 39

Age Profiles

Source: City of Bellingham Comprehensive Plan, Introduction, 2016



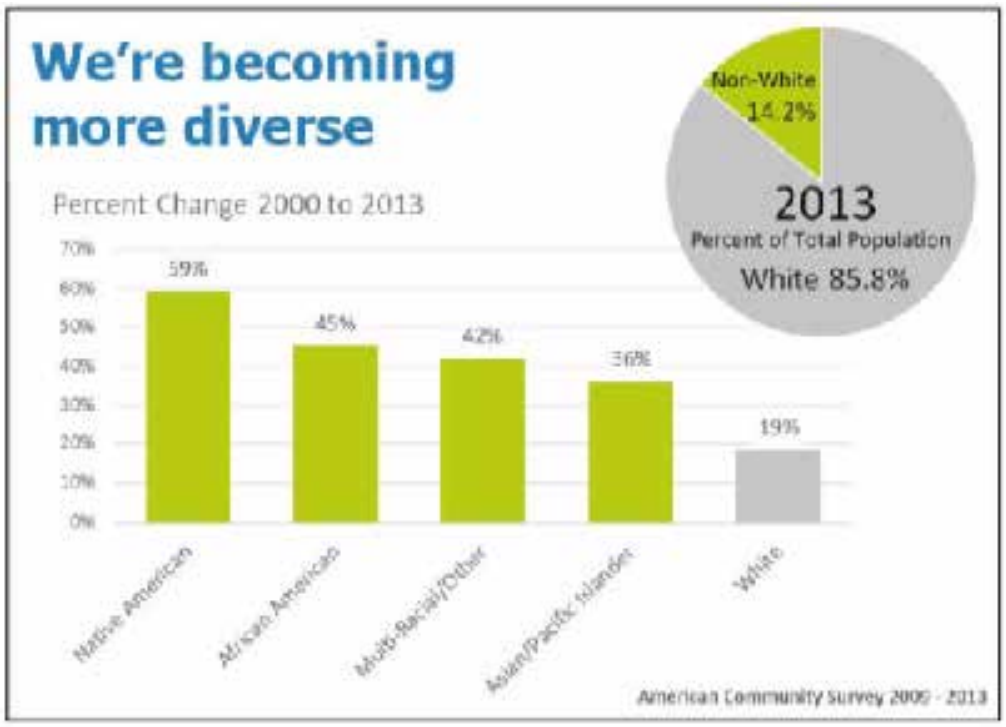


FIG. 40

We're Becoming More Diverse

Source: City of Bellingham Comprehensive Plan, Introduction, 2016

have deemed successful for downtown. Some of these accomplishments are:

- People continue to be interested in living downtown where there is a strong sense of community, active transportation infrastructure, and commercial and retail opportunities.
- The pedestrian infrastructure has continued to increase and improve to incorporate utilization of public space while increasing corridors and connections to and from downtown.
- Bicycling networks have increased and improved in terms of safety through an $11 million investment in bike lanes and bike parking.
- Restoration of the waterfront and Whatcom Creek corridor that runs through downtown has expanded recreation opportunities within downtown.
- Bellingham's farmers market is permanently housed within downtown and provides the community with local and sustainable agriculture.[139]

The Downtown Bellingham Plan outlines ten vision statements that are rooted in community context and engagement activities. Out of theses ten vision statements, three stand out as directly relating to transportation:

1. Downtown's network of public parks, plazas, trails, and open space is enhanced and interconnected
2. Downtown's streets safely accommodate many modes of travel: pedestrians, bicycles, automobiles, transit, and freight.
3. Downtown's streetscape is active and comfortable day and night, with pedestrian-scale lighting, street trees, landscaping, seating, and other

coordinated amenities that establish a distinct identity.

Bellingham's Transportation Context

Bellingham recognizes transportation planning as intricately tied to land use, the pattern of development, and the local economy. Bellingham prides itself on planning a multimodal transportation system that includes a variety of types of transportation networks including pedestrian, bicycle, transit, automobiles, freight trucks, marine ferry, railroads, and airplanes. Bellingham continues to plan for safe and well-connected complete networks for the major everyday transportation needs. These networks are designed for all people, with a variety of abilities to travel comfortably and efficiently through varying modes of travel.

Because Bellingham is Whatcom County's hub for employment, shopping and entertainment, the City recognizes the need for efficient transportation planning in order to advocate transportation mode shift. Almost twice the amount of people commute to Bellingham for work as commute outside of city limits. This, in addition to being the entertainment center, has inspired Bellingham to implement the complete networks approach to planning where they have integrated the transportation modal hierarchy (see Figure 41).[140]

This hierarchy guides the citywide planning efforts, focusing heavily on non-motorized options and public transit. This ultimately guides the City in creating policies that reduce dependence on single occupancy vehicles while increasing quality of life through improvements in health and well-being and reducing greenhouse gasses.

The Bellingham Comprehensive Plan outlines policies that create an underlying structure for transportation development throughout the city. The purposes of these policies are to provide guidance in implementing a complete networks structure approach within Bellingham and

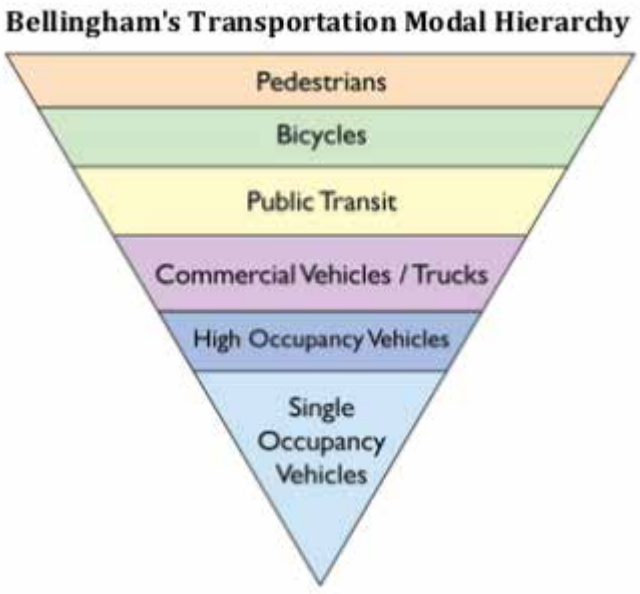


FIG. 41
Bellingham's Transportation Model Hierarchy

Whatcom County. The City recognizes transportation as an important feature that affects all aspects of city life. Therefore, the transportation policies are integrated into citywide planning efforts beyond the transportation chapter. This includes land use, housing, utilities, and design. Bellingham has six transportation goals that impact and guide the City to incorporate a sustainable and efficient multimodal system. These goals are:

- GOAL T-1: Limit urban sprawl by linking land use and transportation planning.
- GOAL T-2: Provide safe, well-connected, and sustainable mobility options for all users.
- GOAL T-3: Increase infrastructure for bicycles, pedestrians, and non-single- occupancy vehicle modes of transportation.
- GOAL T-4: Reduce dependence on single-occupancy vehicles.
- GOAL T-5: Maintain and improve streets, trails, and other infrastructure.
- GOAL T-6: Ensure that social equity needs are addressed in all transportation projects.

The following report outlines aspects of Bellingham's complete network planning and recommended highlights to the City of Eugene to incorporate into future transportation planning.

SUMMARY OF TOOLS

Bellingham utilizes various types of plans, policies, and programs to implement effective parking management, sustainable transportation, and travel demand management. These themes are seen throughout citywide planning documents, municipal code, and policies. The City acknowledges that to create a sustainable and diverse community, it is necessary to implement a variety of housing, employment, and transportation options. Bellingham defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[141] There are a wide variety of programs and policies that meet the city's need for sustainable development in parking management, transportation, and travel demand management. A few of these are listed and described below.

- Complete Networks:[142] Before the Complete Streets movement, Bellingham adopted policies and plans that directly addressed recommendations to accommodate pedestrians, bicyclists, and transit riders as well as vehicle riders along arterial streets.
- TRAM: Transportation Report on Annual Mobility is an annual inventory and assessment of the progress of the Complete Network approach. It allows the City to have accurate and up-to-date information about success and improvements from which the City can learn and adjust. The TRAM includes individual chapters on performance measures and progress of pedestrian, bicycle, transit, automobile, and freight truck networks. Three hundred seventeen development proposals have been evaluated for concurrency in citywide concurrency service areas (CSAs) since 2006.[143]

- Parking Management Plan: This plan is used as a guide for the city to understand the current conditions and demand for parking within downtown. A regular parking study is conducted and helps inform the City about constraints and opportunities for downtown parking. A future parking forecast is conducted to understand the need for future development of parking lots. Currently Bellingham has an over-allotment of parking garages and there is a halt on all near future development. This allows Bellingham to continue to increase multimodal transportation services throughout Bellingham.

- Greenroads Rating System:[144] This is a third-party system operated by the Greenroads Foundation. This program certifies sustainable roadways and transportation infrastructure through a measurable metric based on design and construction practices. Bellingham uses these metrics as a standard for their roadway and transportation development. Bellingham has earned awards from the Greenroads Foundation in excellence in transportation planning.

- Whatcom Smart Trips: A program to help community members increase daily trips through walking, bicycling, ride sharing, and public transit. The goal of Smart Trips is to reduce single occupancy vehicles through incentives and programs that allow for safe and accessible multimodal usership.

- Bellingham Municipal Code: Outlines design standards and regulations that determine development of pedestrian, bicycle, transit, and vehicle infrastructure. The code aligns with the community goals for a sustainable and efficient transportation system while focusing on the transportation modal hierarchy.

- Pedestrian Master Plan: The City of Bellingham Pedestrian Master Plan provides an overview of recommended actions, policies, partner programs, and Bellingham pedestrian networks.

- Bicycle Master Plan: The City of Bellingham Bicycle Master Plan provides an overview of recommended actions, policies, partner programs, and improvements to the Bellingham bicycle networks.

- Multimodal Transportation Concurrency Program: Bellingham has identified Levels of Service (LOS) standards for bicycle, trail, and pedestrian networks based on local needs. This supports Washington GMA requirements for accommodating growth in transportation networks and limits the use of SOVs.

The City of Bellingham brings a holistic approach to transportation planning, recognizing that transportation is a major topic that affects all aspects of city life and vitality. The above plans, programs and policies are examples of this holistic planning approach and are interconnected to create efficient and sustainable transportation networks.

HIGHLIGHTS

This section focuses on highlights within planning documents as ways in which Bellingham has been successful to increase sustainable

transportation, reducing parking demand and implement travel demand management.

Sustainable Transportation

Mode shift goals are a primary target of the Bellingham transportation plans. The reasoning behind mode shifts is to provide transportation choices that are safe, limit the use of SOVs, and reduce vehicle emissions. Forty-eight percent of carbon dioxide emissions originate from motor vehicles in Bellingham, and the City has a goal to reduce these greenhouse gas emissions by 70 percent between 2000 and 2020.[145] Providing the community with non-vehicular transportation options that are safe and connected reduces the number of cars on the road, thus allowing the community to achieve its goal of limiting emissions.

Bellingham's Pedestrian Master Plan and Bicycle Master Plan provide further detail about the City's efforts to meet these goals of promoting multimodal transportation. These plans aim to increase use and access to pedestrian and bicycle networks throughout the city. Both plans identify specific mileage of network development that they would like to see implemented in the city during the comprehensive plan's 20-year window.

Bellingham Pedestrian Master Plan

The guiding principles in the City of Bellingham Pedestrian Master Plan are represented in their listed vision statement, promoting the community values and interest in furthering the pedestrian networks:

> "The residents of Bellingham envision a community that invites people of all ages and abilities to walk for enjoyment, exercise, and daily transportation by providing a safe, convenient, and attractive pedestrian environment."

Primary goals of this plan include safety, equity, health, economy, connectivity, multimodal transportation, and land use and site design of the bicycle networks in the city of Bellingham.[146] The pedestrian plan outlines 30 policies to promote these goals. Common themes seen across these goals and policies include promoting a mode shift to walking trips through site design, infrastructure improvements, and increased access to new users. Large portions of Bellingham's residents frequently walk as a mode of transportation according to the Pedestrian Master Plan. Further growth in the city will require additional infrastructure to continue to uphold this standard of frequent pedestrian travel and limit the use of SOVs. The plan calls for the development of nearly 80 miles of sidewalks, 58 improved crossings, and robust programs to encourage walking for the next 20 years.[147]

To promote this accessibility in its new infrastructure, the Bellingham Pedestrian Plan highlights best practices and design standards that should be incorporated through new infrastructure development. This includes standards for sidewalks and crossings with minimum widths for acceptable infrastructure. The design standards outlined in the plan also include the rationale for including these features and the requisite upkeep for the features over time. This yields more easily implemented standards for their new infrastructure and older infrastructure as it is updated. These renderings serve as the gold standard of what Bellingham should offer residents in pedestrian infrastructure.

A key piece of the accessibility discussion in Bellingham's pedestrian plan is accommodating those with

Impairment	Effect on Mobility	Design Solution
Wheelchair and Scooter Users	Difficulty propelling over uneven or soft surfaces	Firm, stable surfaces and structures, including ramps or beveled edges
	Cross-slopes cause wheelchairs to veer downhill	Cross-slopes to less than two percent
	Require wider path of travel	Sufficient width and maneuvering space
Walking Aid Users	Difficulty negotiating steep grades and cross slopes; decreased stability	Smooth, non-slippery travel surface
	Slower walking speed and reduced endurance; reduced ability to react	Longer pedestrian signal cycles, shorter crossing distances, median refuges, and street furniture
Hearing Impairment	Less able to detect oncoming hazards at locations with limited sight lines (e.g. driveways, angled intersections, right-turn slip lanes) and complex intersections	Longer pedestrian signal cycles, clear sight distances, highly visible pedestrian signals and markings
Vision Impairment	Limited perception of path ahead and obstacles	Accessible text (larger print and raised text), accessible pedestrian signals (APS), guide strips and detectable warning surfaces, safety barriers, and lighting
	Reliance on memory	
	Reliance on non-visual indicators (e.g. sound and texture)	
Cognitive Impairment	Varies greatly. Can affect ability to perceive, recognize, understand, interpret, and respond to information	Signs with pictures, universal symbols, and colors, rather than text

FIG. 42
Design Considerations for Pedestrians with Disabilities
Source: Bellingham Pedestrian Master Plan, Chapter 4, Design Standards

disabilities. Figure 42 provides considerations and solutions for accommodating individuals with disabilities in the pedestrian network. These considerations are incorporated throughout the design standard renderings in the pedestrian plan. This image provides a visual representation of some of the design considerations and solutions provided as national best practices. Including these in the plan more successfully communicates the benefit and need for accessible designs while promoting inclusivity in the transportation networks. Ideally, these designs will promote new and more frequent users with complete and accommodating pedestrian routes.

Bellingham Bicycle Master Plan

The Bellingham Bicycle Master Plan vision is that "bicyclists of all ages and abilities have access to a safe, well-connected network linking all areas of Bellingham."[148] The bicycle plan outlines 26 policies to support the goals and vision statement of the city of Bellingham bicycle transportation. These policies include safety, connectivity, transportation mode shift, and public and environmental health. Infrastructure building, transportation mode shift, accessibility, and environmental impacts are key themes of these policies in the bicycle plan. The remaining chapters outline network improvements, design guidelines for new infrastructure, and recommended partnerships to further these goals.

A priority that is evident in the Bellingham Bicycle transportation plan is the accessibility of their networks to all users, regardless of age, ability, and cycling experience. This plan

references a study conducted by the Portland Department of Transportation, which showed that a large portion of the cyclists in a city are "interested but concerned" riders. This means that they are interested in using this alternate form of transportation but feel that there are infrastructure barriers to using this mode. This population is the target audience for bicycle improvements outlined in the Bicycle Master Plan.[149]

The Bellingham Bicycle Master Plan calls for 134 miles of on-street facilities, with a recommended 50 miles of bike boulevards and 45 miles of bike lanes.[150] These ambitious project plans are prioritized based on safety, connectivity, demand, and equity in Bellingham and also by the short-, medium-, and long-term timelines that will be required to complete.[151] Monitoring the completion of these projects becomes the next step in meeting the goals outlined in the Bicycle Master Plan. Tracking these projects is done annually through the TRAM.

Multimodal Transportation Concurrency Program

The City of Bellingham has incorporated a Multimodal Transportation Concurrency Program in alignment with their goals to improve transportation networks and limit SOVs on roadways. Concurrency is a policy that ensures adequate public facilities and services are available at the time of the impacts of new land development according to locally adopted LOS.[152] In the case of Bellingham's Multimodal Transportation Concurrency, the City must ensure that their transportation networks are improved and standardized to accommodate the city's growth.

The Bellingham Multimodal Transportation Concurrency Program has locally adopted LOS to create measurable data for all modes of transportation, including pedestrian, bicycle, motorized vehicles, transit, and multi-use trails.[153] The LOS defines optimal conditions at which these modes of transportation perform. The inclusion of non-vehicular LOS was new at the time of this program's implementation—Bellingham was one of the first cities to include trail, bicycle, and pedestrian levels of service in their transportation planning processes. Policy T-21 explains the LOS calculation and observed metrics:[154]

Calculate "Person Trips Available by Concurrency Service Area" as Bellingham's Adopted LOS standard to serve planned growth in different parts of the city. Per BMC 13.70 Multimodal Transportation Concurrency, Bellingham and the UGA are divided into CSAs based on differing land use contexts and multimodal LOS is calculated for each CSA using the following performance measurements:

- Completeness of sidewalk network;
- Completeness of bicycle network;
- Whatcom Transit Authority (WTA) transit capacity, transit route frequency, and transit ridership;
- Vehicle traffic volume to capacity; and
- Access to multi-use trails.

Locally defined LOS standards are emphasized in the Bellingham Comprehensive Plan Multimodal Transportation Chapter. This has allowed Bellingham planners to best accommodate the needs and fill gaps in their community. While the method of determining LOS for vehicular travel and the coordination for gathering the WTA metrics remain largely unchanged, the community developed methods to measure non-motorized transportation modes: bicycle, pedestrian, and

trail. Figure 43 represents the LOS measures for individual transportation modes.[155] An example of measuring bicycle and pedestrian networks by connectivity is as follows: if a CSA is 50 percent connected by bicycle network, they receive one-person trip credit. For every additional percent connected the network is, an additional 20 person trips are credited to the CSA.[156]

This program was awarded the APA/PAW Award for Transportation in Washington State in 2009 and has been highly successful in supporting multiple networks in the Bellingham community.[157] A key component of Bellingham's transportation policy is an annual review of policies, programs, and projects by the TRAM. This provides an assessment of the transportation networks has impacted Bellingham's understanding of planning policy and practice. The most recent TRAM stated "that Bellingham's Multimodal Transportation Concurrency methodology is integrating multimodal transportation system capacity within various land use contexts in Bellingham and is further promoting both the Comprehensive Plan and GMA goal of directing new development toward compact, mixed-use urban areas where adequate transportation services and facilities are most available."[158] There is no doubt that this program is successful and effective at moving Bellingham's transportation practices forward.

Travel Demand Management

In the multimodal transportation chapter of the Bellingham Comprehensive Plan, the City outlines the travel demand management (TDM) actions in order to increase safety, efficiency and long-term sustainability of the citywide multimodal transportation system.[159] Bellingham defines TDM as "methods used to improve the efficiency and effectiveness of a community transportation system by reducing travel demand generated by users rather than physical expansion to increase system supply." To do so, Bellingham implements nine actions.

FIG. 43

Bellingham Level of Service Measures

Source: Moving Beyond the Automobile Multimodal Transportation Planning in Bellingham, Washington

Table 3. Bellingham's Level of Service Measures for Individual Transportation Modes

Motorized Transportation Modes	
Arterial Streets	Peak hour LOS person trips available during weekday p.m. peak hour based on data collected at designated concurrency measurement points for each concurrency service area
Transit	Determine seated capacity, measure ridership, and equate to person trips available via public transit service during weekday p.m. peak hour based on data collected at designated concurrency measurement points for each concurrency service area
Non-motorized Transportation Modes	
Bicycle	Credit person trips according to degree of bicycle network completeness for designated system facilities/routes for each concurrency service area
Pedestrian	Credit person trips according to degree of pedestrian network completeness for designated system facilities/routes for each concurrency service area
Trails	Credit person trips according to degree of bicycle and pedestrian network completeness, where trails serve a clear transportation function for a concurrency service area

Action six of the TDM is to "support and implement a Commute Trip Reduction program aimed at reducing congestion, air pollution and energy consumption by requiring large employers and major new developments to reduce the number of single occupancy vehicles being driven to and from those projects."

Commute Trip Reduction Program

The Commute Trip Reduction Program was signed into law in 1991 and is a mandated statewide program in which cities are required to encourage major employers to incentivize non-car commute alternatives amongst the workers. Washington defines major employers as any entity with 100 or more employees.[160] From 2007 to 2017, The Commute Trip Reduction Program has proven to be successful by reporting that statewide, half a million employees increased their non-SOV commute rate from 34.3 to 39.1 percent, resulting in 66 percent higher than the national average.[161]

Bellingham has adopted the Commute Trip reduction program through a partnership between the City of Bellingham, major employers, Whatcom Transit Authority, and Whatcom Council of Governments to implement the desired needs. This program helps the City and County prioritize infrastructure improvements for transit, pedestrian, and bike routes to major sources of employment. The Commute Trip Reduction Program publishes a report every five years to determine where commuter transportation can be updated. As the Commute Trip Reduction Program focuses on major workforce, Bellingham has also implemented the Smart Trips Program for everyday travel.

Smart Trips Program

Smart Trips is a program that helps community members make more of their trips by walking, bicycling, ride sharing, and using the transit system. Whatcom Council of Governments operates this program with financial support from the City of Bellingham, Whatcom County, the Whatcom Transit Authority, Washington State Department of Transportation, and the U.S. Department of Transportation.[162]

The Whatcom Smart Trips program is targeted for people who live or work within Whatcom County and is a collection of programs marketed under a single name. Each program addresses a specific need to help reduce SOV trips. Whatcom Smart Trips includes online trip diaries, incentives, emergency rides, employment partnerships, targeted outreach, school smart trips, EverybodyBIKE program, and a public awareness campaign.[163] The Smart Trips program is outlined on the Whatcom County Smart Trips website where other cities are encouraged to watch a 50-minute video on implementation strategies.

The City of Bellingham has taken a proactive approach to travel demand management strategies. The Commute Trip Reduction program and the Smart Trips program are two major ways in which the City is systematically reducing the need for SOVs.

Parking Management

In order to create an efficient multimodal transportation network, the City of Bellingham acknowledges the necessity of a well-managed parking system. Bellingham Municipal Code 20.12.010 determines parking regulations throughout the city.[164] The Downtown Bellingham Plan creates goals and strategies to implement a downtown vision aligned with the

municipal code and the community needs.

Municipal Code 20.12.010 details minimum parking regulations within a smart growth model. Utilizing a smart growth model establishes regulations that are tailored to specific development projects and ensures a detailed approach to parking management. Bellingham implemented this smart growth model after a study suggested there was an overstock of garages within downtown Bellingham. Downtown Eugene is currently experiencing the opposite of Bellingham's over development of parking. With Eugene's limited downtown parking, the tactics and strategies for managing these issues differ greatly. Bellingham accomplished three smart growth concepts in the formation of their parking regulations:[165]

1. Parking requirements based on development type and size referring to square footage of buildings and type of land use:[166]

(b) Commercial
   i. General Business, Personal Service Establishments (exclusive of shopping centers, and food markets larger than 20,000 square feet)
      - One for every 250 square feet of floor area open to the public.

2. Take into account population and development density while incorporating shared use parking lots between residents and businesses

The amount of off-street parking required by this chapter may be reduced by an amount determined by the director when shared parking facilities for two or more uses are proposed.[167]

3. City has the ability to reduce minimum parking limits with the availability of transit systems

The director shall have the authority to reduce the number of required off-street parking spaces for subsections(A)(2)(a), (b) and (c) of this section, up to a maximum of 25 percent, when:

b. Whatcom Transportation Authority GoLine route is provided within one-quarter mile of the site. The amount of reduction shall be based on the number of transit runs during peak hours each business day.[168]

According to the downtown parking study, the downtown area exceeds the necessary minimum parking requirements due to previous overdevelopment of parking structures within the downtown area. Due to this overdevelopment, the City has placed an ordinance (No 2014-09-049) that reduces the downtown business district from future parking development. There are no new surface lots allowed within the downtown area as the city focuses on increasing multimodal transportation.

Downtown Bellingham Plan

The Downtown Bellingham Plan is a targeted long-term planning document that explains development strategies for the commercial core of Bellingham and Whatcom County. Downtown Bellingham provides employment, housing, entertainment, and commercial services that attract a diverse and growing population. The purpose of the Downtown Bellingham Plan is to create a vision for the downtown that stakeholders and community believes in. Goals

and strategies were created to help implement this vision. The plan outlines the natural and historical context, design and sustainability, land use, activities and tourism, parks and open space, transportation, and streetscape design and parking.

Chapter 8 of the Downtown Bellingham Plan outlines parking management policies and practices that were determined best suited for the city center through the Parking Management Plan. The Parking Management Plan is justified through an extensive analysis of current conditions and future parking projections. The goal of the Parking Management Plan is to determine a range of easily accessible off-street parking choices for local businesses and residents as well as establish an appropriate amount of on-street parking to slow drivers as well as provide easy access to short term customers. The City determined an appropriate on-street parking turnover rate would occur more frequently while longer-term parking would occur off-street.

Current conditions were determined through the 2013 Final Parking Study of the Downtown Sun-Area (Parking Study). This study summarizes the number of spaces, the average utilization, and the average turnover rate between on-street and off-street parking locations. The study performs an extensive inventory to determine the current conditions. The inventory includes:

- Supply: on-street parking, off street parking
- Utilization: on-street paid, on street unpaid, off-street paid, off street unpaid, weekday off-street parking
- Duration: length of stay for parked vehicles during summer and autumn
- Comparison: previous 2005 study

Future parking demand and supply forecasts parking demand for the Downtown Sub-Area. These projections help encourage a holistic understanding of future policies and strategies to implement over time while allowing the city foresight to mitigate parking demand. The parking study details current land use through GIS and Census data and compares that to future land use projections provided by the City of Bellingham. Future land use projections are determined through previous rate of growth and development assumed rate of absorption of vacant commercial square-footage, and the Old Town assumed rate of development.[169]

The results of the study suggest parking management strategies for improving efficiency, reducing demand, increasing awareness, enforcement, and authority.[170]

- Reducing Demand: strategies that are aimed at reducing parking demands through shifting travel modes and/or changing behaviors during peak demand periods
- Improving Efficiency: strategies that are aimed at maximizing the use and efficiency of parking supply
- Awareness, Enforcement, and Authority: strategies related to making the public aware of the parking regulations and locations, enforcing regulations and policies, and monitoring parking conditions to continually make improvements and ensure strategies are appropriate as conditions change.[171]

The Parking Study details parking strategies through these three categories. The Downtown Parking Management Plan adopted 17 policies that were based on the recommendations presented within the Parking Study. These policies fall under Goal 8.1 and are detailed in Appendix A Table 1.1-3:

> "GOAL 8.1: Maximize the efficient use of the existing parking supply in on-street, off-street and private parking facilities and areas."[172]

Bellingham's Parking Management Plan is effective because it has clear prioritized policies that target the reduction of parking demand, improving efficient parking supply, and increasing public awareness of enforced regulations. These policies are consistent with the vision of Downtown Bellingham and provide realistic steps for the City to follow. Performing an extensive parking study informs Bellingham on current conditions and future projections while tracking successes over time.

Summary of Highlights

These policies, actions, programs, and plans have successfully increased sustainable transportation, reduced parking demand, and implemented travel demand management in the city of Bellingham. The City of Eugene is seeking innovative ideas and strategies to decrease SOVs and the vehicle emissions associated with this mode of transportation. The above section provided an overview of strategies employed by the City of Bellingham.

Application of Findings to Eugene

The following section proposes policy recommendations for the City of Eugene to consider as they continue to improve accessibility and sustainable transportation in and to downtown Eugene. Recommendations are derived from the evaluation of case studies' policies, which offer an incentive-based and collaborative framework by which to encourage travel alternatives to SOVs. Recommendations are organized into three broad sections: 1) Sustainable Transportation, 2) Travel Demand Management, and 3) Parking Management. Under each section are subsections that address specific aspects of each strategy.

SUSTAINABLE TRANSPORTATION

This section contains recommendations specific to planning for sustainable transportation, expanding the availability and enhancing the experience of sustainable transportation in Eugene.

Planning for Sustainable Transportation

- Set measurable objectives, monitor, and track progress. The City of Eugene could set measurable objectives, then monitor and track progress over time. This is a fundamental first step to ensure that any strategies that the City pursues can be assessed and evaluated over time. By having clear objectives to evaluate, funding, capacity, and resources can be optimized to pursue strategies that are the most impactful. Furthermore, doing this would increase transparency and allow the public to clearly observe the impacts of the City's strategies. These measurable objectives should first be set in the plan, evaluated every two years and summarized in a report, and published in an online dashboard displaying the objectives, progress, and performance.
- Incorporate a Hierarchy of Transportation and Mobility Priorities for Downtown. The first strategy that Eugene could implement within the city is a hierarchy of transportation and mobility priorities for the downtown area. Victoria has demonstrated great success by developing a set of priorities that has allowed the City and downtown area to develop achievable and targeted transportation strategies. By utilizing a hierarchy of transportation and mobility priorities as a conceptual framework for transportation planning, Victoria has effectively created high walk, transit, and bike scores within the downtown area with a walk score of 99, a transit score of 76, and a bike score of 75. These priorities have also allowed Victoria to develop specific strategies and plans for each of the key areas of the hierarchy (pedestrian, cycling, transit, and vehicles) with each plan having specific goals, target timelines, and policies that will help shape future planning for the downtown area.

Similar to Victoria and other cities across the states, Eugene has many

competing modes of transportation and needs from the community. As the city continues to grow and prepare for future events, implementing a hierarchy of transportation and mobility priorities that is specific to the downtown area can help target areas of need and focus efforts on specific priorities. A suggested hierarchy for the City of Eugene can include public transit, pedestrian, cycling, utility vehicles, and SOV parking.

Additionally, Eugene has implemented a downtown plan that discusses priorities and policies for transportation in the downtown area. However, as the plan was implemented in 2004, Eugene could consider adding an addendum to the plan that lists the hierarchy of priorities for the downtown area and expands on additional transportation policies and strategies for future improvements. Victoria has demonstrated great progress with their targeted priorities and strategies discussed in their Downtown Core Plan, which Eugene could consider implementing as well.

Expanding Availability

- Frequent travel networks and areas. To better incentivize transit-oriented development (TOD), Eugene could adopt a frequent travel network and areas (FTN) planning system. By combining transit networks and land use designations, the City could achieve higher ridership and more concentrated development. Eugene's current TOD overlay is only applied to the downtown area and could align itself with other transit networks outside of that area. The City should be applying the TOD overlay along EmX routes and consider creating a few more high–priority routes to provide more frequent service to and then change zoning accordingly.

Additionally, Eugene can expand the TOD Overlay Between the University and Downtown. The area between UO and downtown has the potential to function as a corridor for active, multimodal, and public transit access between two key community areas. To better support this vision, the City of Eugene can:

A Extend the TOD overlay zone between UO and Lincoln Street. Extending this overlay zone all the way to downtown and evaluating the addition of a special mixed-use district may help to encourage more non-SOV movement of students to downtown.

B Use the TOD overlay to promote safer, more comfortable pedestrian amenities, complete bike infrastructure, and more frequent transit service in this area. With only one mile between campus and downtown, this has the potential to bring UO's large student population downtown via non-vehicular means, helping to support and enliven downtown businesses without putting additional strain on parking limitations.

C Conduct a traffic study of intersections in this corridor to determine where cyclists and pedestrians have difficulty safely sharing the road. Focus on accident reduction on key intersections to make this corridor more transit-friendly. Enhancing safety infrastructure for active transit commuters is likely to reduce accidents.

- Expand LOS standards to include multimodal transportation networks. Bellingham's Multimodal Transportation Chapter within the Comprehensive Plan most resembles Chapter 4 of the City of Eugene's Transportation System Plan (TSP) discussing "Creating Multimodal Systems." This chapter provides a summary of projects that would improve multimodal transportation networks, such as: filling gaps in sidewalk networks, better wayfinding signage, and educational programs. The chapter highlights that there is an established LOS for vehicular travel only.

  Eugene could benefit from the inclusion of LOS for other modes of transportation, including pedestrian and cycling travel. This would be a method to improve, develop, and monitor network connectivity. Adding LOS to other methods would support Eugene's goals of expanding and improving transportation networks, as noted in the Comprehensive Plan and the Bicycle and Pedestrian Master Plan. The City would need to define what level of service would be acceptable for each mode and set metrics to measure. This would support the existing goals and objectives listed in the City of Eugene's plans. These additions could draw more users to these multimodal methods of transportation and encourage future use based on expected growth.

- Improve Bike-Share Accessibility. While PeaceHealth has not been implemented as long as Capital Bikeshare and the population served is substantially smaller, there are some important recommendations the City could adopt to improve transportation by bike.

  A The City could begin to look into expanding the geozone for PeaceHealth in other parts of the city as well as into the city of Springfield. By allowing users to have more options where bike-share is available, the City can incentivize more people to utilize bikes as a travel mode. Arlington saw a quadruple in the amount of people using bikes as a mode.

  B Reduce barriers, such as payment methods, that limit the use of PeaceHealth bike-share so that those who do not typically have credit cards can also participate in bike-share.

  C Locate bike-share stations to attract greater numbers of system users and improve non-motorized access to city facilities and transit services and ensure that convenient access to bike-share is available especially in lower-income residential areas.

  D Identify how GPS-based, dockless bike-sharing systems can best integrate with and complement PeaceHealth bike-share and other transportation services.

  E Promote bike-sharing as a preferred travel mode for first and last mile trips to and from transit services.

  F Work with PeaceHealth to add electric-assist bikes, tricycles, and other types of bicycles to better accommodate the travel needs of persons with mobility disabilities.

- Legalize Skateboarding within Downtown. Although skateboarding

is currently illegal on streets and sidewalks within downtown, skateboarding is a great alternative mode of transportation that Eugene has a great opportunity to incorporate into a downtown transportation plan. Skateboarding has been recognized as an excellent form of exercise and a low carbon way to travel city streets; therefore, downtown Victoria has legalized and encouraged skateboarding through the publishing of maps and the removal of prohibition on skateboards and similar forms of transportation, such as skates and non-motorized scooters, on public streets, bike paths, and greenways.

Adding a skateboarding bylaw, similar to Victoria's, to legalize skateboarding in downtown Eugene would incorporate laws that would require skateboarders and users of similar modes of travel to adhere to the same rights and responsibilities as a cyclist. Laws such as wearing lights when dark outside and maintaining position to the far-right side of the road, as well as providing a regulation that riders must keep one foot on the skateboard at all times when riding are recommended policies. Fines and warnings would also be issued under provision of this bylaw for users not adhering to the rules set forth.

Enhancing the Experience

- New Mobility Research Grants. Eugene could consider enhancing its initiatives to engage with post-secondary institutions and researchers. Though the City currently works with the University of Oregon in various ways, Vancouver's TransLink's New Mobility Research Grant program offers a framework for building impactful collaborations with researchers and technologists. The program's commitment to long-term funding for well-defined projects through an open call model allows Vancouver to accept submissions from unlikely departments or organizations and to see those projects through research, development, piloting, and, in some cases, adoption. By investing in long-term research focused on the City's unique needs, Eugene could better anticipate and help shape the future of its transportation systems.

- Pavement-to-Plazas and Parklets. Eugene could begin experimenting with creative uses of public space that encourage walking in the downtown area and begin to plan for the eventual elimination of parking spaces as travel habits shift towards more sustainable modes. Vancouver's programs offer a useful framework for incorporating incremental and cost-effective transformations of parking infrastructure into public plazas. Vancouver's Pavement-to-Plaza strategy, in which the City chooses strategic spaces to temporarily convert into a plaza, has provided important data on how such areas are used once converted, and has allowed the City to make wise investments in more permanent site improvements. Furthermore, the parklet program, which focuses on encouraging private sponsors to build parklets, has proven to be beneficial for the businesses, drawing additional customers in, while simultaneously providing a new source of in-kind donations and data about how new public spaces are being used. Implementing these kinds of programs in Eugene could help de-incentivize driving in the downtown area by eliminating

some street parking spaces while simultaneously enhancing the experience for pedestrians.

- Improve listed accessibility standards of the bicycle and pedestrian networks. The City of Eugene has limited outlined accessibility standards in their Bicycle and Pedestrian Master Plan. The existing standards refer to the transition plan, which also provide limited detail on the existing and planned ADA compliance transitions of the public infrastructure in the city of Eugene.

  Eugene could benefit from further provisions of accessibility standards as outlined in the Bellingham Bicycle and Pedestrian Master Plans. These plans highlighted targeted populations and sought to engage with and provide methods through which this engagement would be achieved. A focus on providing stress-free bicycle infrastructure to attract those who might otherwise not use these systems is an ideal way to both expand the network and incorporate accessibility. Eugene can increase access to pedestrian networks through increasing connectivity between neighborhoods and community amenities. Inclusion of individuals with specific needs in the pedestrian networks will be important to further the goal of accessibility and decrease vehicle occupancy. The option for all individuals, regardless of age or ability, to engage with these networks will support this goal. Better inclusion of standards to improve infrastructure to include these groups could benefit the City of Eugene in this effort.

- Develop a Neighborhood Access Tool in partnership with Lane Transit District and integrate it into planning. The City of Eugene could develop a Neighborhood Access Tool (NAT) in partnership with Lane Transit District and incorporate the analysis into land use and transportation plans, policies, and strategies. The land use-transportation connection should be accounted for in all strategies and the NAT provides a measurable way to assess and evaluate if that connection is being accounted for. Specifically, the City of Eugene and LTDs' current Moving Ahead initiative should include the NAT tool to coordinate land use and transit system planning efforts. A policy requiring the use of the NAT in analysis may be included into relevant planning documents, as well. Once developed, the NAT should be updated and analyzed annually, and a joint report between LTD and the City should be produced summarizing the information. The NAT should be made available on through a GIS online platform, if possible, to increase transparency and accountability.

- Integrate more flexibility into the City's strategy. The City of Eugene could integrate flexibility into its current strategy by piloting and experimenting creative policies and programs prior to full commitment. A prime example from Boulder is the Living Lab pilot program. This program allows the City to engage the community and experiment different bike treatments and receive feedback from the community. While the results have been mixed, the ability of the city to learn from these pilots is useful in informing its overall strategy. If the City of Eugene is to make significant progress, the rate at which projects move and actions occur needs to evolve at the same

pace transportation challenges evolve. This is more pressing as new mobility technologies such as autonomous vehicles and e-scooters transform how people move.

- Curbless Streets. Seattle is rapidly implementing curbless streets in its downtown area to increase the pedestrian friendly nature of the area. Downtown Eugene currently does this near the Kesey Square area but this could be expanded to other areas of the downtown core. A curbless street can help create an environment that is conducive to pedestrian traffic by creating the perception that the sidewalk extends into the roadway.

- Integrate a Standardized Wayfinding System within Eugene. As Eugene has a great network of bike paths, greenways, and transit in addition to several parks and tourist attractions widespread throughout a large downtown area, an integrated and standardized wayfinding strategy similar to Victoria's is recommended for Eugene. As Eugene's downtown area continues to grow, it is recommended as a method of educating visitors and residents within the downtown of the many desirable locations to be visited while encouraging alternative modes of transportation. A standardized wayfinding strategy would allow the City to encourage pedestrians, cyclists, vehicles, and transit riders to visit designated attractions and direct them to these destinations. It would also allow cyclists and pedestrians to determine the most direct and safest routes, transit riders to find their nearest bus station, and drivers to easily find parking. Additionally, it would alert each of these users of interesting and unique locations and landmarks in Eugene that they might not otherwise discover while encouraging a sense of curiosity.

  While Victoria contracted the design of their wayfinding strategy out to a Canadian design company called Public, Eugene could explore more affordable options. Incorporating large-scale maps within the downtown area illustrating the nearest transit, parking, cycling routes, greenways, and landmarks and their respective distances could encourage visitors to explore a larger area of Eugene that they may not have otherwise. Furthermore, Victoria found that 82 percent of people were more likely to walk after consulting a map, decreasing traffic in the downtown area. Wayfinding would be an interesting and unique sphere of planning that could help Eugene accomplish its goals to reduce traffic and increase visitation within the downtown corridor as it continues to grow in the coming years.

- Incorporate Pedestrian Through-Block Walkways within Downtown. There may be many opportunities for Eugene to incorporate through-block pedestrian passageways into their downtown area to enhance the pedestrian experience and encourage pedestrian movement through the downtown. There are several city blocks within the downtown area with underutilized alleys, such as Pearl Alley, Oak Alley and the alleys on either side of West Broadway between Charnelton and Olive Streets, which have the capacity and ability to transform into vibrant pedestrian spaces. Eugene could work with local artists to create special art exhibits, provide

permits for "legal street art," provide incentives to street vendors, and hire street performers and musicians to perform within these locations. Furthermore, these alleys could be redesigned to incorporate street lighting, pavers, and street furniture to create a fun pedestrian-scaled location for visitors to discover and explore.

TRAVEL DEMAND MANAGEMENT

This section contains recommendations specific to enhancing the City of Eugene's TDM programming.

- Use TDM calculators and other measures to analyze return on investment as well as public health impacts. The City could conduct regular, regional reporting on travel demand and commuter behavior using metrics consistent with its TDM programs.

- Coordinate TDM efforts with the City of Springfield. Apply TDM programs to non-work travel as well as commuting for resident, visitor, and employee trips through informational displays, website, promotional campaigns, and mailings of materials. Specifically, Eugene could implement a system such as TravelSmart to provide individualized marketing to target transportation demand. TravelSmart, used in more than 300 projects around the world, identifies individuals who want to change the way they travel and uses personal, individualized contact to motivate them to reconsider their travel options. TravelSmart gives participants the customized information they ask for to help them get started, or to continue walking, bicycling, riding transit, or carpooling.

- Employee Trip Reduction Plan for Organizations. The City of Eugene could work with public and private employers to shift travel modes of downtown employees. A combination of Vancouver's Employee Trip Reduction Plan and Compass for Organizations could provide support for employees through subsidized public transit, carpooling services, and bicycling programs. This would build off Eugene's current bus pass program for government employees and could be offered to private employers as well. The program could also be expanded to include more educational programming about transportation and bicycling, as well as organize networks for carpooling and other commute assistance. While the City of Eugene's Point2Point and Group Pass programs already offer an array of tools and incentives for employers to address their employees' transportation needs, the City could consider offering employers more flexibility by incorporating some of Vancouver's strategies into these programs. Currently, employers in Eugene can get a discounted rate if they buy a pass for all of their employees. In Vancouver, employers have the option to buy passes for select employees, to pay for only a portion of their passes, and to select the amount of time they wish to pay that employee's transit costs. This level of flexibility would likely encourage more employers to subsidize employee transit costs.

- Enhance University Partnerships. Like Arlington, the city of Eugene has a robust student community who might better access downtown areas with enhanced active and

public transportation options. Whereas Arlington's university has formalized shuttle programs to bring students to and from commercial centers, Eugene has EmX as a transit option between the university and downtown. To enhance student access to downtown, the City could:

A Expand service times to include more frequent and later service to and from the university to enhance the convenience of reaching downtown from University area.

B Adopt a more formalized shuttle service between the university and downtown to both bring students downtown and ensure that Safe Ride services are used as intended. Students currently use the Safe Ride program to access downtown, impeding the service's intention to provide an alternative to discourage drunk driving, and to carry students to their destinations after dark or at other times when they feel unsafe walking.

C Expand educational programming about transportation options and safety. In particular, this partnership could ensure that all incoming students receive education about how to safely cycle, and how to interact with cyclists on the road.

- Develop a community-wide Eco Pass program in partnership with Lane Transit District. The City of Eugene could develop an Eco Pass program that offers a community-wide discounted annual, universal transit pass that provides access to Lane Transit District bus services and PeaceHealth bike-share rides. The City of Eugene already has a partnership with the University of Oregon to provide LTD transit service which this strategy would build upon. The program is based on the City of Boulder's Eco Pass program but expands it to be available to everyone and integrates the bike-share program. Eugene is in the opportune position to integrate the bike-share program since it is city-owned. This recommendation moves Eugene towards a Mobility as a Service model, which removes barriers to using sustainable transportation options and encourages multimodality.

PARKING MANAGEMENT

This section contains recommendations specific to dis-incentivizing parking usage, maximizing the efficiency of parking, and minimizing the impact in Eugene.

Disincentivizing Parking Usage

- Performance-Based Parking. Currently parking is one of the most important topics that cities face. Alternate forms of transportation are becoming more popular, and car ownership and driver's license rates are starting to decrease, likely causing a decrease in municipal revenue from parking. To combat this issue, Seattle has instituted a performance parking system that charges different rates during different times of day based on the demand. This TDM strategy has proven effective in other cities, and also discourages drivers from parking, or even driving during these peak hours.

Maximizing the Efficiency of Parking

- Implement app-based parking management program like goBerkeley. The City of Eugene could adhere to a Net-Zero strategy for

commercial district. In addition, it can use real time technology adjusts prices based on current parking demand. Further, providing clear and direct signage with parking instructions would enhance the efficiency of parking in downtown Eugene.

- Adopt the SUMP principles to guide parking management. The City of Eugene could adopt the SUMP principles as official guiding principles for how it manages parking city-wide and specially in the downtown. Adopting these principles would replace the existing policies stating parking should be affordable and convenient. Instead, the full cost of traveling in private automobile will be accounted for and travel behavior will shift. In addition to adopting the SUMP principles, an implementation strategy based on them could be developed for downtown Eugene.

- Implement aspects of Bellingham's Smart Growth Model. The Smart Growth Model for parking regulations incorporates requirements based on development, land use designations, and building square footage. Bellingham takes into account population and development density while incorporating shared use parking between residents and businesses to reduce demand for multiple parking garages. In contrast, the City of Eugene refers to land use designations in their parking regulations. This can result in over-supplying parking in the downtown area. Including population and development density considerations could result in more targeted parking in the areas of highest need and will result in limited parking availability to promote the use of other transportation methods within downtown.

Minimizing the Impact of Parking

- Utilize public parking facilities management and activation. The City of Eugene could retrofit parking garages in the style of the Center Street Garage. By retrofitting, they could create state of the art, multi-use, parking facilities that can double as activated public spaces instead of dead zones. Parking facilities could also use a tiered pricing scheme that prioritizes bikes, carpools, and vanpools.

- Minimize Curb Space Usage. Curb space is essential in any community. It provides the opportunity to load and deliver services and for people to be dropped off via ride-sharing. However, given that a lot of curb space is not utilized to the best of its ability given the amount of parked cars, the City of Eugene can rethink what the use of curbs looks like.

A Allow curb space to be used by small vehicles such as scooters, bikes, and motorcycles.

B Utilize time-of-day restrictions to maximize the availability of curb space for the greatest number of users throughout the day.

C Allow parking in the curb lanes of certain streets during off-peak hours if safety and traffic flow is able to be maintained.

D Create additional curb space availability in areas with a high demand for curb space via street redesign if necessary

Conclusion

Eugene stands at a critical point in its history. Recently, the downtown area has experienced an increase in community involvement, and more companies are moving into the downtown area. Along with this success comes the need to revisit existing plans, policies, and programs to ensure they adequately address the issues and needs of the future.

Eugene now has the opportunity to continue this momentum by enhancing its current sustainable transportation strategy and positioning the downtown to grow and thrive into the future. While Eugene has a national reputation of providing alternative transportation options, it still has room for improvement.

In this report, we have examined seven case study cities—both within the United States and abroad—and nearly 30 of their major transportation-related documents. By learning from exemplary domestic and international cities and implementing new sustainable transportation strategies, Eugene can move closer to achieving its goal of tripling the share of trips made by walking, biking, and transit as well as meeting its greenhouse gas emission reduction targets. This report provides the City of Eugene a menu of innovative policy and program options to choose from as it works towards making its downtown more accessible to people by all modes of transportation.

Notes

1. City of Berkeley. City of Berkeley Demographic and Economic Profile. Berkeley, CA: Office of Economic Development. October 30, 2015. https://www.cityofberkeley.info

2. U.S. Census Bureau / American Factfinder. "B01003: Total Population." 2013-2017 American Community Survey. U.S. Census Bureau's American Community Survey Office, 2017. Web. 10 June 2019. https://factfinder.census.gov

3. U.S. Census Bureau / American Factfinder. "S1401: Student Enrollment." 2013-2017 American Community Survey. U.S. Census Bureau's American Community Survey Office, 2017. Web. 10 June 2019. https://factfinder.census.gov

4. City of Berkeley. Downtown Area Plan. Berkeley, CA: Department of Planning & Development, 2012. https://www.cityofberkeley.info/dap/

5. Downtown Area Plan, pg. IN-9

6. Ibid

7. City of Berkeley. Downtown Area Plan.

8. City of Berkeley. Downtown Area Plan.

9. U.S. Census Bureau / American Factfinder. "B08301: Means of Transportation to Work." 2013-2017 American Community Survey. U.S. Census Bureau's American Community Survey Office, 2017. Web. 10 June 2019. https://factfinder.census.gov

10. U.S. Census Bureau / American Factfinder. "B08301: Means of Transportation to Work." 2013-2017 American Community Survey. U.S. Census Bureau's American Community Survey Office, 2017. Web. 10 June 2019. https://factfinder.census.gov

11. City of Berkeley. General Plan: Transportation Element. Berkeley, CA: Berkeley, CA: Department of Planning & Development, 2003. https://www.cityofberkeley.info/Planning_and_Development/Home/General_Plan_-_Transportation_Element.aspx

12. City of Berkeley. General Plan: Transportation Element. Berkeley, CA: Department of Planning & Development, 2003.

13. City of Berkeley. Downtown Area Plan.

14. City of Berkeley. Ballot Measure G: Greenhouse Gas Emissions. Berkeley, CA: City Clerk, 2006. https://www.cityofberkeley.info/uploadedFiles/Clerk/Elections/Ballot%20Measures%202006.pdf

15. City of Berkeley. Climate Action Plan. Berkeley, CA: Office of Energy and Sustainable Development, 2009. https://www.cityofberkeley.info/climate/

16. City of Berkeley. Bicycle Boulevard Design Tools and Guidelines. Berkeley, CA: Transportation Division, 1999.: https://www.cityofberkeley.info/ContentDisplay.aspx?id=6652

17. City of Berkeley, "Bike Corrals," City of Berkeley Transportation Division, 2019. Retrieved 6/10/2019 from https://www.cityofberkeley.info/bikecorral/

18. City of Berkeley. Downtown Area Plan.

19. BART, "Downtown Berkeley BART Plaza and Transit Area Improvement Project," BART, 2019. Retrieved 6/10/2019 from

20. https://www.bart.gov/about/projects/dbp

21. BART, "Downtown Berkeley BART Entrance & Plaza Opens Oct 18." Press Release, October 11, 2018. BART. Retrieved 6/10/2019 from https://www.bart.gov/

22. City of Berkeley. Climate Action Plan.

23. Littman, Todd. Parking Management: Strategies, Evaluation and Planning. Victoria, BC, CA: Victoria Transport Policy Institute, 2016. https://www.vtpi.org

24. Nelson\Nygaard Consulting Associates. Existing Parking and Transportation Demand Management Programs, Conditions, and Practices. Berkeley, CA: Department of Planning & Development, 2010. https://www.cityofberkeley.info/

25. City of Berkeley. General Plan: Transportation Element

26. Hicks, Tony. "Berkeley's new $40M, 720-car Center Street garage opens today." Berkeleyside, November 2, 2018. Retrieved 6/10/2019 from https://www.berkeleyside.com/2018/11/02/berkeleys-new-40m-720-car-center-street-garage-opens-today

27. City of Berkeley. Climate Action Plan.

28. City of Berkeley. Streets and Open Space Improvement Plan. Berkeley, CA: Department of Planning and Development, 2012. https://www.cityofberkeley.info/Planning_and_Development/Downtown_Area_Plan/Streets_and_Open_Space_Improvement_Plan.aspx

29. City of Berkeley. "Parking Meters," City of Berkeley Transportation Division, 2019. Retrieved 6/10/2019 from https://www.cityofberkeley.info/Public_Works/Transportation/Parking_Meters.aspx#_goBerkeley

30. City of Berkeley. General Plan: Transportation Element. Policy T-3

31. AC Transit. "EasyPass for Residents," AC Transit, 2019. Retrieved 6/10/2019 from http://www.actransit.org/actrealtime/easypass/

32. AC Transit. "EasyPass for Residents," AC Transit, 2019. Retrieved 6/10/2019 from http://www.actransit.org/actrealtime/easypass/

33. City of Berkeley. General Plan: Transportation Element. Policy T-11

34. Nelson\Nygaard Consulting Associates. Downtown Berkeley Parking and Transportation Demand Management Report. Berkeley, CA: Department of Planning and Development, 2011.

https://www.cityofberkeley.info/uploadedFiles/Public_Works/Level_3_-_Transportation/BERKELEY%20PTDM%20DRAFT%20FINAL%20-%20NEW.pdf

35. Climate Action Plan, TLU-10B; General Plan, T-10, T-11, T-14

36. AC Transit. "EasyPass for Employers," AC Transit, 2019. Retrieved 6/10/2019 from http://www.actransit.org/actrealtime/easypass/

37. City of Berkeley, "Commuter Programs and Public Transportation," City of Berkeley Transportation Division, 2019. Retrieved 6/19/2019 from https://www.cityofberkeley.info/commute/#TRACC

38. City of Berkeley, "Commuter Programs and Public Transportation."

39. California Air Resources Board, "California's Parking Cash Out Program," California Air Resources Board, October 17, 2017. Retrieved 6/10/2019 from https://www.arb.ca.gov/planning/tsaq/cashout/cashout.htm.

40. City of Berkeley, "Berkeley Bike Share," City of Berkeley Transportation Division, 2019. Retrieved 6/10/2019 from https://www.cityofberkeley.info/BerkeleyBikeShare.aspx.

41. UC Berkeley, "Bikeshare," UC Berkeley Parking and Transportation, 2019. Retrieved 6/10/2019 from https://pt.berkeley.edu/transportation-options/bicycle/bikeshare

42. "Our City," City of Vancouver Website, https://vancouver.ca/news-calendar/our-city.aspx

43. "City of Vancouver 2016 Census Population and Dwelling Counts," City of Vancouver Website, https://vancouver.ca/files/cov/2017-02-08-city-of-vancouver-2016-census-population-and-dwelling-counts.PDF

44. Metro Vancouver 2040: Shaping Our Future, Regional Growth Strategy (2010). http://www.metrovancouver.org/services/regional-planning/PlanningPublications/RGSAdoptedbyGVRDBoard.pdf

45. For information regarding "livability" rankings, see https://www.tourismvancouver.com/media/corporate-communications/vancouvers-awards-and-accolades/

46. Greenest City 2020 Action Plan, Part Two: 2015-2020, https://vancouver.ca/green-vancouver/greenest-city-action-plan.aspx

47. Formally known as the South Coast British Columbia Transportation Authority, TransLink is the statutory authority responsible for Vancouver's regional transportation network of including public transportation, as well as major roads and bridges. https://www.translink.ca/

48. "CityPlan: Directions for Vancouver (1995), https://council.vancouver.ca/previous_years/950530/rr1.htm

49. Downtown Eastside Plan (2014), https://vancouver.ca/files/cov/downtown-eastside-plan.pdf

50. Metro Vancouver (B.C.). TransLink. Metro Vancouver 2040: Shaping Our Future: Regional Growth Strategy, Bylaw No. 1136, 2010. Burnaby, B.C.: Metro Vancouver, 2010.

51. Metro Vancouver. TransLink. Transportation 2040 Plan. Vancouver, BC, 2012.

52. Metro Vancouver. TransLink. Cycling for Everyone. Vancouver, BC, 2011.

53. City of Victoria. (2011, September). Downtown Core Area Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Planning~Development/Community~Planning/Local~Area~Planning/Downtown~Core~Area~Plan/DTCP_book_web.pdf

54. Ibid.

55. Ibid.

56. City of Victoria. (2011, September). Downtown Core Area Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Planning~Development/Community~Planning/Local~Area~Planning/Downtown~Core~Area~Plan/DTCP_book_web.pdf

57. City of Victoria. (2008, July 29). Pedestrian Master Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/

58.Departments/Engineering~Public~Works/Documents/transportation-pedestrian-master-plan.pdf

59. City of Victoria. (2017, October). Downtown Public Realm Plan and Streetscape Standards. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Community/VICTORIA DOWNTOWN PUBLIC REALM GUIDELINES_web.pdf

60. City of Victoria. (1995, February). Bicycle Master Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Engineering~Public~Works/Documents/departments_engtran_bcyclm.p

61. Ibid.

62. BC Transit. (2011, May). Transit Future Plan: Victoria Region. Retrieved May 25th, 2019 from https://www.bctransit.com/documents/1507213421003

63. BC Transit. (2011, May). Transit Future Plan: Victoria Region. Retrieved May 25th, 2019 from https://www.bctransit.com/documents/1507213421003

64. City of Victoria. (2011, September). Downtown Core Area Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Planning~Development/Community~Planning/Local~Area~Planning/Downtown~Core~Area~Plan/DTCP_book_web.pdf

65. City of Victoria. (2008, July 29). Pedestrian Master Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/

66. Departments/Engineering~Public~Works/Documents/transportation-pedestrian-master-plan.pdf

67. City of Victoria. (2011, September). Downtown Core Area Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Planning~Development/Community~Planning/Local~Area~Planning/Downtown~Core~Area~Plan/DTCP_book_web.pdf

68. City of Victoria. (2017, October). Downtown Public Realm Plan and Streetscape Standards. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Community/VICTORIA DOWNTOWN PUBLIC REALM GUIDELINES_web.pdf

69. City of Victoria. (2017, April). City of Victoria Wayfinding Strategy. Retrieved June 5th, 2019 from https://www.victoria.ca/assets/Departments/Planning~Development/Community~Planning/Documents/Final%20City%20of%20Victoria%20WayfindingStrategy.pdf

70. City of Victoria. (2008, July 29). Pedestrian Master Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/

71. Departments/Engineering~Public~Works/Documents/transportation-pedestrian-master-plan.pdf

72. City of Victoria. (2016, January). Streets and Traffic (Skateboarding) Amendment: a Bylaw of the City of Victoria. Retrieved June 7th from https://www.victoria.ca/assets/Community/Documents/16-013-Streets-Traffic-Amendment-Bylaw-Skateboarding.pdf

73. City of Victoria. (1995, February). Bicycle Master Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Engineering~Public~Works/Documents/departments_engtran_bcyclm.p

74. Ibid.

75. City of Victoria. (1995, February). Bicycle Master Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Engineering~Public~Works/Documents/departments_engtran_bcyclm.p

76. Ibid.

77. Ibid.

78. Ibid.

79. City of Victoria. (2011, September). Downtown Core Area Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Planning~Development/Community~Planning/Local~Area~Planning/Downtown~Core~Area~Plan/DTCP_book_web.pdf

80. Ibid.

81. City of Victoria. (2007). Parking Strategy. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Engineering~Public~Works/Documents/2007%20Parking%20Strategy.pdf#search=%22Parking%20Strategy%22

82. City of Victoria. (2007). Parking Strategy. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Engineering~Public~Works/Documents/2007%20Parking%20Strategy.pdf#search=%22Parking%20Strategy%22

83. 2013-2017 American Community Survey 5-year estimates.

84. Ibid.

85. Best Places: Arlington, Virginia. (2018). Retrieved from: https://www.bestplaces.net/economy/city/virginia/arlington

86. Best Places: Arlington, Virginia. (2018). Retrieved from: https://www.bestplaces.net/economy/city/virginia/arlington

87. Arlington Transit. (2019). Fares. Routes and Schedules. Retrieved from: https://www.arlingtontransit.com/

88. State of the Commute Report. (2016). Arlington Commuter Services. Retrieved from: https://1105am3mju9f3st1xn20q6ek-wpengine.netdna-ssl.com/wp-content/uploads/2018/05/State-of-the-Commute-Arlington_final.pdf

89. Henaghan, J. (2018). Corridor Planning. The American Planning Association. Retrieved from: https://www.planning.org/publications/document/9159816/

90. Henaghan, J. (2018). Corridor Planning. The American Planning Association. Retrieved from: https://www.planning.org/publications/document/9159816/

91. General Land Use Plan. (2018). Arlington County Comprehensive Plan. Pgs. 16-17. Retrieved from: https://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2018/10/Booklet_December_2017_10222018.pdf

92. General Land Use Plan. (2018). Arlington County Comprehensive Plan. Retrieved from: https://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2018/10/Booklet_December_2017_10222018.pdf

93. Pedestrian Element: Master Transportation Plan. (2009) Arlington County Comprehensive Plan. Retrieved from: https://arlingtonva.s3.dualstack.us-east-1.amazonaws.com/wp-content/uploads/sites/31/2014/02 /DES-MTP-Pedestrian-Element.pdf

94. Ibid.

95. City of Boulder. (2019, June 10). About Us: Demographics. Retrieved from City of Boulder, Colorado: https://bouldercolorado.gov/boulder-measures/about-us-boulder-demographics

96. Ibid.

97. Henao, A., Piatkowski, D., Luckey, K., Nordback, K., Marshall, W. E., & Krizek, K. J. (2015). Sustainable transportation infrastructure investments and mode share changes: A 20-year background of Boulder, Colorado. Transport Policy, 64-71.

98. City of Boulder. (2014). Transportation Master Plan. Boulder: City of Boulder, Colorado.

99. Henao, A., Piatkowski, D., Luckey, K., Nordback, K., Marshall, W. E., & Krizek, K. J. (2015). Sustainable transportation infrastructure investments and mode share changes: A 20-year background of Boulder, Colorado. Transport Policy, 64-71.

100. City of Boulder. (2019, June 8). Bike. Retrieved from City of Boulder, Colorado:

101. https://bouldercolorado.gov/goboulder/bike

102. Boulder B-Cycle. (2018). Boulder Bike Sharing 2018 Annual Report. Boulder: Boulder B-Cycle.

103. Regional Transportation District. (2019, June 8). Who We are. Retrieved from RTD: http://www.rtd-denver.com/who-we-are.shtml

104. City of Boulder. (2019, June 8). Bus. Retrieved from City of Boulder, Colorado:

105. https://bouldercolorado.gov/goboulder/bus

106. Ibid.

107. City of Boulder. (2019, June 9). Hop Bus. Retrieved from City of Boulder, Colorado:

108. https://bouldercolorado.gov/hopbus

109. City of Boulder. (2016). 2016 Downtown Urban Design Guidelines. Boulder: City of Boulder.

110. City of Boulder/Boulder County. (2017). Boulder Valley Comprehensive Plan. Boulder: City of

111.Boulder/Boulder County. Pg. 9

112. Ibid. Pg. 7

113. Ibid. Pg. 73

114. City of Boulder. (2014). Transportation Master Plan. Boulder: City of Boulder, Colorado.

115. City of Boulder/Boulder County. (2017). Boulder Valley Comprehensive Plan. Boulder: City of

116. Boulder/Boulder County. Pg. 77

117. City of Boulder/Boulder County. (2017). Boulder Valley Comprehensive Plan. Boulder: City of

118. Boulder/Boulder County. Pg. 52

119. City of Boulder/Boulder County. (2017). Boulder Valley Comprehensive Plan. Boulder: City of

120. Boulder/Boulder County. Pg. 76

121. City of Boulder. (2014). Transportation Master Plan. Boulder: City of Boulder, Colorado.

122. Ibid.

123. Ibid. p. 52

124. Boulder B-Cycle. (2018). Boulder Bike Sharing 2018 Annual Report. Boulder: Boulder B-Cycle.

125. City of Boulder. (2014). Transportation Master Plan. Boulder: City of Boulder, Colorado. p. 56

126. City of Boulder. (2014). Transportation Master Plan. Boulder: City of Boulder, Colorado. P. 50

127. City of Boulder. (2019, June 8). Bike. Retrieved from City of Boulder, Colorado:

128. https://bouldercolorado.gov/goboulder/bike

129. City of Boulder. (2014). Transportation Master Plan. Boulder: City of Boulder, Colorado.

130. Ibid.

131. City of Boulder. (2014). Transportation Master Plan. Boulder: City of Boulder, Colorado.

132. Ibid. Pg. 44

133. City of Boulder. (2014). Transportation Master Plan. Boulder: City of Boulder, Colorado.

134. City of Boulder. (2014). Transportation Master Plan. Boulder: City of Boulder, Colorado.

135. City of Boulder. (2018). Access Management & Parking Management Strategy. Boulder: City of Boulder, Colorado.

136. City of Boulder/Boulder County. (2017). Boulder Valley Comprehensive Plan. Boulder: City of

137. Boulder/Boulder County. p. 76.

138. City of Boulder, Colorado. (2018). The 2018 Transportation Report on Progress. Boulder: City of Boulder, Colorado.

139. City of Boulder, Colorado. (2018). The 2018 Transportation Report on Progress. Boulder: City of Boulder, Colorado.

140. https://ppms.trec.pdx.edu/media/project_files/NITC-SS-1174_How_Will_AVs_Change_Local_Government_Finance_7f5bpbv.pdf

141. https://www.seattlebikeblog.com/2015/02/25/69-percent-of-downtown-workers-dont-drive-alone/combined-modesplit-media-release-and-infographic-overtime/

142. http://www.seattle.gov/Documents/Departments/SDOT/ParkingProgram/rpz/RPZ_Factsheet.pdf

143. http://www.oregonapa.org/wp-content/uploads/2018/04/Zero-Vision.pdf

144. City of Seattle. Seattle 2035. Seattle, WA. Office of Planning and Community

Development, 2018. https://www.seattle.gov/Documents/Departments/OPCD/OngoingInitiatives/SeattlesComprehensivePlan/SeattleComprehensivePlanCouncilAdopted2018.pdf. p. 23.

145. City of Seattle. Seattle 2035. Seattle, WA. Office of Planning and Community Development, 2018. https://www.seattle.gov/Documents/Departments/OPCD/OngoingInitiatives/SeattlesComprehensivePlan/SeattleComprehensivePlanCouncilAdopted2018.pdf. p. 24.

146. City of Seattle. Seattle 2035. Seattle, WA. Office of Planning and Community Development, 2018. https://www.seattle.gov/Documents/Departments/OPCD/OngoingInitiatives/SeattlesComprehensivePlan/SeattleComprehensivePlanCouncilAdopted2018.pdf. p. 24.

147. City of Seattle. Seattle 2035. Seattle, WA. Office of Planning and Community Development, 2018. https://www.seattle.gov/Documents/Departments/OPCD/OngoingInitiatives/SeattlesComprehensivePlan/SeattleComprehensivePlanCouncilAdopted2018.pdf. p. 25.

148. https://www.seattle.gov/Documents/Departments/OPCD/OngoingInitiatives/SeattlesComprehensivePlan/UrbanVillageElement.pdf.

149. http://www.seattle.gov/transportation/projects-and-programs/programs/urban-design-program/complete-streets-in-seattle/what-is-a-complete-street.

150. Page 10, Downtown Bellingham Plan, Planning and Community Development Department, 2014

151. Page 6, Downtown Bellingham Plan, Planning and Community Development Department, 2014

152. Page 7, City of Bellingham Comprehensive Plan, Multimodal Transportation Chapter, 2016

153. Page 13, Downtown Bellingham Plan, Planning and Community Development Department, 2014

154. Page 6, City of Bellingham Comprehensive Plan, Multimodal Transportation Chapter, 2016

155. Page 10, Chris Comeau, AICP-CTP. Transportation Report on Annual Mobility . assessment , Bellingham : City of Bellingham , 2019.

156. Downtown Bellingham Plan, Planning and Community Development Department, 2014

157. The City of Bellingham Washington. 2014 Bellingham Bicycle Master Plan. Comprehensive Plan, Bellingham: TranspoGroup , 2014 , p. 4.

158. The City of Bellingham Washington. Bellingham Pedestrian Master Plan. Comprehensive Plan, Bellingham Alta Planning + Design, 2012, p. 2.

159. The City of Bellingham Washington. Bellingham Pedestrian Master Plan. Comprehensive Plan, Bellingham: Alta Planning + Design, 2012.

160. The City of Bellingham Washington. 2014 Bellingham Bicycle Master Plan. Comprehensive Plan, Bellingham: TranspoGroup , 2014, p. 1.

161. The City of Bellingham Washington. 2014 Bellingham Bicycle Master Plan. Comprehensive Plan, Bellingham: TranspoGroup, 2014, p. 32.

162. Bellingham Bicycle Plan, The City of Bellingham Washington. 2014 Bellingham Bicycle Master Plan. Comprehensive Plan, Bellingham: TranspoGroup, 2014.

163. The City of Bellingham Washington. 2014 Bellingham Bicycle Master Plan. Comprehensive Plan, Bellingham: TranspoGroup, 2014, p. 56.

164. Chris Comeau, AICP-CTP. Moving Beyond the Automobile Multi-modal Transportation Planning in Bellingham, Washington. Case Study, Bellingham: American Planning Association, 2009, p. 1.

165. The City of Bellingham. “Bellingham Comprehensive Plan.” Comprehensive Plan, Bellingham, 2016.

166. The City of Bellingham. “Bellingham Comprehensive Plan, Multimodal Transportation Chapter.” Comprehensive Plan, Bellingham , 2016, p. 15.

167. Chris Comeau, AICP-CTP. Moving Beyond the Automobile Multi-modal Transportation Planning in Bellingham, Washington. Case Study, Bellingham: American Planning Association, 2009, p. 9.

168. Chris Comeau, AICP-CTP. Moving Beyond the Automobile Multi-modal Transportation Planning in Bellingham, Washington. Case Study, Bellingham: American Planning Association, 2009, p. 12.

169. Chris Comeau, AICP-CTP. Transportation Report on Annual Mobility. Assessment, Bellingham: City of Bellingham, 2019, p. 10.

170. Chris Comeau, AICP-CTP. Transportation Report on Annual Mobility. Assessment, Bellingham: City of Bellingham, 2019, p. 13.

171. The City of Bellingham. “Bellingham Comprehensive Plan, Multimodal Transportation Chapter.” Comprehensive Plan, Bellingham, 2016, p. 9.

172. Commute Trip Reduction Program- Overview, Washington State Department of Transportation https://www.wsdot.wa.gov/transit/ctr/overview

173. Commute Trip Reduction Board Report, Washington State, 2017, p. 2.

174. City of Bellingham Comprehensive Plan, Multimodal Transportation Chapter, 2016, p. 10.

175. SmartTrip Program website, https://www.whatcomsmarttrips.org/

176. Bellingham Municipal Code 20.12.010, General Standards Parking

177. Forinash, Christopher V., Adam Millard-Bal, Jeffrey Tumlin, and Charlotte Dougherty. "Smart Growth Alternatives to Minimum Parking Requirements." 2nd Urban Street Symposium, July 2003, 1-11.

178. Bellingham Municipal Code 20.12.010 B (b) i, General Standards Parking

179. Bellingham Municipal Code 20.12.010 A 6 a, General Standards Parking

180. Bellingham Municipal Code 20.12.010 A (5) b, General Standards Parking

181. Final Parking Study: Downtown Sub-Area, TranspoGroup, City of Bellingham. March 2013, p. 24.

182. Final Parking Study: Downtown Sub-Area, TranspoGroup, City of Bellingham. March 2013, p. 24.

183. Final Parking Study: Downtown Sub-Area, TranspoGroup, City of Bellingham. March 2013, p. 27.

184. Downtown Bellingham Plan, Planning and Community Development Department, September 2014, p. 51.

References

2 U.S. Census Bureau (2019). QuickFacts, 2010-2018 Retrieved from:https://www.census.gov/quickfacts/fact/table/seattlecitywashington,eugenecityoregon/PST040218

AC Transit. "EasyPass for Employers," AC Transit, 2019. http://www.actransit.org/actrealtime/easypass/

AC Transit. "EasyPass for Residents," AC Transit, 2019. http://www.actransit.org/actrealtime/easypass/

Arlington County. (2019). Fast Facts. Retrieved from: https://projects.arlingtonva.us/data-research/fast-facts/

Arlington County. (2019). Profile. Retrieved from: https://www.arlingtonva.us/profile/

Arlington Transit. (2019). Fares. Routes and Schedules. Retrieved from: https://www.arlingtontransit.com/

Arlington Transportation Partners. (2019) TDM for Site Plans. Arlington County Commuter Services. Retrieved from: https://arlingtontransportationpartners.com/programs/property-development/tdm-for-site-plans/

BART, "Downtown Berkeley BART Entrance & Plaza Opens Oct 18." Press Release, October 11, 2018. BART. https://www.bart.gov/

BART, "Downtown Berkeley BART Plaza and Transit Area Improvement Project," BART, 2019.https://www.bart.gov/about/projects/dbp

BC Transit. (2011, May). Transit Future Plan: Victoria Region. Retrieved May 25th, 2019 from https://www.bctransit.com/documents/1507213421003

Bellingham Bicycle Plan, The City of Bellingham Washington . 2014 Bellingham Bicycle Master Plan . Comprehensive plan , Bellingham : TranspoGroup , 2014.

Bellingham Municipal Code 20.12.010 A (5) b, General Standards Parking

Bellingham Municipal Code 20.12.010 A 6 a, General Standards Parking

Bellingham Municipal Code 20.12.010 B (b) i, General Standards Parking

Bellingham Municipal Code 20.12.010, General Standards Parking

Best Places: Arlington, Virginia. (2018). Retrieved from: https://www.bestplaces.net/economy/city/virginia/arlington

Bicycle Element: Master Transportation Plan. (2019) Arlington County Comprehensive Plan. Retrieved from: https://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2019/05/MTP_Bicycle_Element_2019_adopted.pdf

BikeArlington. (2018) Bike Comfort Map. Retrieved from: http://www.bikearlington.com/wp-content/uploads/2017/09/2018BikeComfortMap-min.pdf

Boulder B-Cycle. (2018). Boulder Bike Sharing 2018 Annual Report. Boulder: Boulder B-Cycle.

Boulder B-Cycle. (2019, June 10). Map/App. Retrieved from Boulder B-Cycle:

California Air Resources Board, "California's Parking Cash Out Program," California Air Resources Board, October 17, 2017. https://www.arb.ca.gov/planning/tsaq/cashout/cashout.htm.

Capital Regional District. (2014, August). The Capital Regional District: Regional Transportation Plan. Retrieved May 24th, 2019 from https://www.crd.bc.ca/docs/default-source/regional-planning-pdf/transportation/rtp-july2014.pdf?sfvrsn=1f706bca_8

Census Bureau: https://www.census.gov/quickfacts/fact/table/eugenecityoregon,bouldercitycolorado/HSG4952 17

Chris Comeau, AICP-CTP. Moving Beyond the Automobile Multi-modal Transportation Planning in Bellingham, Washington. Case Study, Bellingham: American Planning Association, 2009.

Chris Comeau, AICP-CTP. Moving Beyond the Automobile Multi-modal Transportation Planning in Bellingham, Washington. Case Study, Bellingham: American Planning Association, 2009.

Chris Comeau, AICP-CTP. Transportation Report on Annual Mobility . assessment , Bellingham : City of Bellingham , 2019.

Chris Comeau, AICP-CTP. Transportation Report on Annual Mobility . assessment , Bellingham : City of Bellingham , 2019.

City of Bellingham Comprehensive Plan, Introduction, 2016

City of Bellingham Comprehensive Plan, Multimodal Transportation Chapter, 2016

City of Bellingham Comprehensive Plan, Multimodal Transportation Chapter, 2016

City of Bellingham Comprehensive Plan, Multimodal Transportation Chapter, 2016

City of Berkeley, "Berkeley Bike Share," City of Berkeley Transportation Division, 2019. https://www.cityofberkeley.info/BerkeleyBikeShare.aspx.

City of Berkeley, "Bike Corrals," City of Berkeley Transportation Division, 2019. https://www.cityofberkeley.info/bikecorral/

City of Berkeley, "Commuter Programs and Public Transportation," City of Berkeley Transportation Division, 2019. https://www.cityofberkeley.info/commute/#TRACC

City of Berkeley. "Parking Meters," City of Berkeley Transportation Division, 2019. https://www.cityofberkeley.info/Public_Works/Transportation/Parking_Meters.aspx#_goBerkeley

City of Berkeley. Ballot Measure G: Greenhouse Gas Emissions. Berkeley, CA: City Clerk, 2006.https://www.cityofberkeley.info/uploadedFiles/Clerk/Elections/Ballot%20Measures%202006.pdf

City of Berkeley. Bicycle Boulevard Design Tools and Guidelines. Berkeley, CA: Transportation Division, 1999. https://www.cityofberkeley.info/ContentDisplay.aspx?id=6652

City of Berkeley. City of Berkeley Demographic and Economic Profile. Berkeley, CA: Office of Economic Development. October 30, 2015. https://www.cityofberkeley.info

City of Berkeley. Climate Action Plan. Berkeley, CA: Office of Energy and Sustainable Development, 2009. https://www.cityofberkeley.info/climate/

City of Berkeley. Downtown Area Plan. Berkeley, CA: Department of Planning & Development, 2012. https://www.cityofberkeley.info/dap/

City of Berkeley. General Plan: Transportation Element. Berkeley, CA: Berkeley, CA: Department of Planning & Development, 2003. https://www.cityofberkeley.info/Planning_and_Development/Home/General_Plan_-_Transportation_Element.aspx

City of Berkeley. Streets and Open Space Improvement Plan. Berkeley, CA: Department of Planning and Development, 2012. https://www.cityofberkeley.info/Planning_and_Development/Downtown_Area_Plan/Streets_and_Open_Space_Improvement_Plan.aspx

City of Boulder, Colorado. (2018). The 2018 Transportation Report on Progress. Boulder: City of Boulder,

City of Boulder, Colorado. (2019). Los Stress Multimodal Network Plan. Retrieved from City of Boulder, Colorado: https://bouldercolorado.gov/transportation/low-stress-multimodal-network-plan

City of Boulder. (2014). Transportation Master Plan. Boulder: City of Boulder, Colorado.

City of Boulder. (2016). 2016 Downtown Urban Design Guidelines. Boulder: City of Boulder.

City of Boulder. (2018). Access Management & Parking Management Strategy. Boulder: City of Boulder,

City of Boulder. (2019, June 10). *About Us: Demographics*. Retrieved from City of Boulder, Colorado: https://bouldercolorado.

gov/boulder-measures/about-us-boulder-demographics

City of Boulder. (2019, June 10). *About Us: Demographics*. Retrieved from City of Boulder, Colorado: https://bouldercolorado.gov/goboulder/bike

City of Boulder. (2019, June 10). *About Us: Demographics*. Retrieved from City of Boulder, Colorado: https://bouldercolorado.gov/goboulder/bus

City of Boulder. (2019, June 10). *About Us: Demographics*. Retrieved from City of Boulder, Colorado: https://bouldercolorado.gov/goboulder/downtown-boulder-station

City of Boulder. (2019, June 10). *About Us: Demographics*. Retrieved from City of Boulder, Colorado: https://bouldercolorado.gov/visitors

City of Boulder. (2019, June 10). *About Us: Demographics*. Retrieved from City of Boulder, Colorado: https://bouldercolorado.gov/hopbus

City of Boulder. (2019, June 10). About Us: Demographics. Retrieved from City of Boulder, Colorado:

City of Boulder. (2019, June 8). Bike. Retrieved from City of Boulder, Colorado:

City of Boulder. (2019, June 8). Bus. Retrieved from City of Boulder, Colorado:

City of Boulder. (2019, June 8). Downtown Boulder Station. Retrieved from City of Boulder, Colorado:

City of Boulder. (2019, June 8). Explore Boulder. Retrieved from City of Boulder Colorado:

City of Boulder. (2019, June 9). Hop Bus. Retrieved from City of Boulder, Colorado:

City of Boulder/Boulder County. (2017). Boulder Valley Comprehensive Plan. Boulder: City of Boulder/Boulder County.

City of Eugene, "Climate Recovery Ordinance," City of Eugene Central Services Department, 2016. https://www.eugene-or.gov/3210/Climate-Recovery-Ordinance

City of Eugene, Oregon. (2017). Eugene 2035 Transportation System Plan. Eugene: City of Eugene,

City of Eugene. (2019). Homepage. Retrieved from City of Eugene, Oregon: https://www.eugene-or.gov/

City of Seattle. Seattle 2035. Seattle, WA. Office of Planning and Community Development, 2018.

City of Vancouver 2016 Census Population and Dwelling Counts, City of Vancouver Website,https://vancouver.ca/files/cov/2017-02-08-city-of-vancouver-2016-census-population-and-dwelling-counts.PDF

City of Victoria (n.d.). About Victoria. Retrieved June 9, 2019, from https://www.victoria.ca/EN/main/residents/about.html

City of Victoria. (1995, February). Bicycle Master Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Engineering~Public~Works/Documents/departments_engtran_bcyclm.p

City of Victoria. (2007). Parking Strategy. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Engineering~Public~Works/Documents/2007%20Parking%20Strategy.pdf#search=%22Parking%20Strategy%22

City of Victoria. (2008, July 29). Pedestrian Master Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/

City of Victoria. (2011, September). Downtown Core Area Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Planning~Development/Community~Planning/Local~Area~Planning/Downtown~Core~Area~Plan/DTCP_book_web.pdf

City of Victoria. (2012, July). Official Community Plan. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Departments/Planning~Development/Community~Planning/OCP/Up~to~date~OCP/OCP_WholeBook.pdf

City of Victoria. (2016, January). Streets and Traffic (Skateboarding) Amendment: a

Bylaw of the City of Victoria. Retrieved June 7th from https://www.victoria.ca/assets/Community/Documents/16-013-Streets-Traffic-Amendment-Bylaw-Skateboarding.pdf

City of Victoria. (2017, April). City of Victoria Wayfinding Strategy. Retrieved June 5th, 2019 from https://www.victoria.ca/assets/Departments/Planning~Development/Community~Planning/Documents/Final%20City%20of%20Victoria%20WayfindingStrategy.pdf

City of Victoria. (2017, October). Downtown Public Realm Plan and Streetscape Standards. Retrieved May 18, 2019, from https://www.victoria.ca/assets/Community/VICTORIA DOWNTOWN PUBLIC REALM GUIDELINES_web.pdf

City of Victoria. (n.d.). Transportation Reference Documents. Retrieved May 18, 2019, from https://www.victoria.ca/EN/main/residents/transportation/transportation-reference-documents.html

City of Victoria. (n.d.). Transportation. Retrieved May 18, 2019, from https://www.victoria.ca/EN/main/residents/transportation.html

CityPlan: Directions for Vancouver (1995), https://council.vancouver.ca/previous_years/950530/rr1.htm

Colorado.

Colorado.

Commute Trip Reduction Board Report, Washington State, 2017

Commute Trip Reduction Program-Overview, Washington State Department of Transportation https://www.wsdot.wa.gov/transit/ctr/overview

Demand and System Management Element: Master Transportation Plan. (2008) Arlington County Comprehensive Plan. Retrieved from: https://arlingtonva.s3.dualstack.us-east-1.amazonaws.com/wp-content/uploads/sites/31/2014/02 /DES-MTP-Demand-and-System-Management-Element.pdf

Departments/Engineering~Public~Works/Documents/transportation-pedestrian-master-plan.pdf

Design , 2012.

Downtown Bellingham Plan, Planning and Community Development Department, 2014

Downtown Bellingham Plan, Planning and Community Development Department, 2014

Downtown Bellingham Plan, Planning and Community Development Department, 2014

Downtown Bellingham Plan, Planning and Community Development Department, September 2014

Downtown Eastside Plan (2014), https://vancouver.ca/files/cov/downtown-eastside-plan.pdf

Eugene, Springfield, Lane County. (2015). Eugene-Springfield Metropolitan Area General Plan. Eugene-

Final Parking Study: Downtown Sub-Area, TranspoGroup, City of Bellingham. March 2013

For information regarding “livability” rankings, see https://www.tourismvancouver.com/media/corporate-communications/vancouvers-awards-and-accolades/

for Vancouver’s regional transportation network of including public transportation, as well as major roads and bridges. https://www.translink.ca/

Forinash, Christopher V., Adam Millard-Bal, Jeffrey Tumlin, and Charlotte Dougherty. "Smart Growth Alternatives to Minimum Parking Requirements." 2nd Urban Street Symposium, July 2003, 1-11.

Formally known as the South Coast British Columbia Transportation Authority, TransLink is the statutory authority responsible

General Land Use Plan. (2018). Arlington County Comprehensive Plan. Retrieved from: https://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2018/10/Booklet_December _2017_10222018.pdf

Greenest City 2020 Action Plan, Part Two: 2015-2020, https://vancouver.ca/green-vancouver/greenest-city-action-plan.aspx

Henaghan, J. (2018). Corridor Planning. The American Planning Association. Retrieved from: https://www.planning.org/publications/document/9159816/

Henao, A., Piatkowski, D., Luckey, K., Nordback, K., Marshall, W. E., & Krizek, K. J. (2015). Sustainable

Hicks, Tony. "Berkeley's new $40M, 720-car Center Street garage opens today." Berkeleyside, November 2, 2018. https://www.berkeleyside.com/2018/11/02/berkeleys-new-40m-720-car-center-street-garage-opens-today

http://www.oregonapa.org/wp-content/uploads/2018/04/Zero-Vision.pdf.

http://www.seattle.gov/Documents/Departments/SDOT/ParkingProgram/rpz/RPZ_Factsheet.pdf.

http://www.seattle.gov/transportation/projects-and-programs/programs/urban-design-program/complete-streets-in-seattle/what-is-a-complete-street.

https://boulder.bcycle.com/

https://ppms.trec.pdx.edu/media/project_files/NITC-SS-1174_How_Will_AVs_Change_Local_Government_Finance_7f5bpbv.pdf.

https://www.seattle.gov/Documents/Departments/OPCD/OngoingInitiatives/SeattlesComprehensivePlan/SeattleComprehensivePlanCouncilAdopted2018.pdf.

https://www.seattle.gov/Documents/Departments/OPCD/OngoingInitiatives/SeattlesComprehensivePla

https://www.seattle.gov/Documents/Departments/SDOT/About/DocumentLibrary/Levy/MoveSeatte-FinalDraft-2-25-Online.pdf.

https://www.seattlebikeblog.com/2015/02/25/69-percent-of-downtown-workers-dont-drive-alone/combined-modesplit-media-release-and-infographic-overtime/.

Littman, Todd. Parking Management: Strategies, Evaluation and Planning. Victoria, BC, CA: Victoria Transport Policy Institute, 2016. https://www.vtpi.org

Metro Vancouver (B.C.). TransLink. Metro Vancouver 2040: Shaping Our Future: Regional Growth Strategy, Bylaw No. 1136, 2010. Burnaby, B.C.: Metro Vancouver, 2010.

Metro Vancouver 2040: Shaping Our Future, Regional Growth Strategy (2010). http://www.metrovancouver.org/services/regional-planning/PlanningPublications/RGSAdoptedbyGVRDBoard.pdf

Metro Vancouver. TransLink. Cycling for Everyone. Vancouver, BC, 2011.

Metro Vancouver. TransLink. Transportation 2040 Plan. Vancouver, BC, 2012.

n/UrbanVillageElement.pdf.

Nelson\Nygaard Consulting Associates. Downtown Berkeley Parking and Transportation Demand Management Report. Berkeley, CA: Department of Planning and Development, 2011.https://www.cityofberkeley.info/uploadedFiles/Public_Works/Level_3_-_Transportation/BERKELEY%20PTDM%20DRAFT%20FINAL%20-%20NEW.pdf

Nelson\Nygaard Consulting Associates. Existing Parking and Transportation Demand Management Programs, Conditions, and Practices. Berkeley, CA: Department of Planning & Development, 2010. https://www.cityofberkeley.info/

Oregon.

Our City, City of Vancouver Website, https://vancouver.ca/news-calendar/our-city.aspx

Parking and Curb Space Element: Master Transportation Plan. (2009) Arlington County Comprehensive Plan. Retrieved from: https://arlingtonva.s3.dualstack.us-east-1.amazonaws.com/wp-content/uploads/sites/31/2014/02 /DES-MTP-Parking-and-Curb-Space-Management-Element.pdf

Pedestrian Element: Master Transportation Plan. (2009) Arlington County Comprehensive Plan. Retrieved from: https://arlingtonva.s3.dualstack.us-east-1.amazonaws.com/wp-content/uploads/sites/31/2014/02 /DES-MTP-Pedestrian-Element.pdf

RCW Title 36 Chapter 70a Section 020, Washington State Legislature

Regional Transportation District. (2019, June 8). Who We are. Retrieved from RTD: http://www.rtd-

SeattleComprehensivePlanCouncilAdopted 2018.pdf. (Pg. 25).

SmartTrip Program website, https://www.whatcomsmarttrips.org/

Soneji, S. and Olkkonen, A. (2014) Healthier Commuting. Planning. Vol. 8, Issue 7, 34-35.

Springfield, Oregon.

State of Oregon. (2010). Oregon's Statewide Planning Goals & Guidelines. Oregon: State of Oregon.

State of the Commute Report. (2016). Arlington Commuter Services. Retrieved from: https://1105am3mju9f3st1xn20q6ek-wpengine.netdna-ssl.com/wp-content/uploads/2018/05/Stat e-of-the-Commute-Arlington_final.pdf

The City of Bellingham . "Bellingham Comprehensive Plan ." Comprehensive Plan , Bellingham , 2016.

The City of Bellingham Washington . 2014 Bellingham Bicycle Master Plan . Comprehensive plan , Bellingham : TranspoGroup , 2014.

The City of Bellingham Washington . 2014 Bellingham Bicycle Master Plan . Comprehensive plan , Bellingham : TranspoGroup , 2014.

The City of Bellingham Washington . 2014 Bellingham Bicycle Master Plan . Comprehensive plan , Bellingham : TranspoGroup , 2014.

The City of Bellingham Washington . Bellingham Pedestrian Master Plan . Comprehensive Plan , Bellingham : Alta Planning + Design , 2012.

The City of Bellingham Washington . Bellingham Pedestrian Master Plan . Comprehensive Plan , Bellingham : Alta Planning +

The City of Bellingham Washington. 2014 Bellingham Bicycle Master Plan . Comprehensive plan , Bellingham : TranspoGroup , 2014.

The City of Eugene . Eugene Pedestrian and Bicycle Master Plan . Master Plan , Eugene : City of Eugene , 2012.

Transportation Demand Management Image. (2018). Retrieved from https://www.tripshot.com/on-demand-transportation/

transportation infrastructure investments and mode share changes: A 20-year background of Boulder, Colorado. Transport Policy, 64-71. denver.com/who-we-are.shtml

U.S. Census Bureau / American Factfinder. "B01003: Total Population." 2013-2017 American Community Survey. U.S. Census Bureau's American Community Survey Office, 2017. Web. 10 June 2019. https://factfinder.census.gov

U.S. Census Bureau / American Factfinder. "B08301: Means of Transportation to Work." 2013-2017 American Community Survey. U.S. Census Bureau's American Community Survey Office, 2017. Web. 10 June 2019. https://factfinder.census.gov

U.S. Census Bureau / American Factfinder. "S1401: Student Enrollment." 2013-2017 American Community Survey. U.S. Census Bureau's American Community Survey Office, 2017. Web. 10 June 2019. https://factfinder.census.gov

U.S. Census Bureau. (2019). Quick Facts, Eugene city, Oregon, Boulder city, Colorado. Retrieved from U.S.

UC Berkeley, "Bikeshare," UC Berkeley Parking and Transportation, 2019. Retrieved 6/10/2019 from https://pt.berkeley.edu/transportation-options/bicycle/bikeshare

Appendix A

Major Documents Reviewed

Table 1: Major Documents Reviewed, By Case Study

City of Bellingham	Arlington County	City of Vancouver, BC	City of Seattle	City of Victoria	City of Berkeley	City of Boulder	City of Eugene
Comprehensive Plan (2016)	Comprehensive Plan (2019)	Metro Vancouver 2040 Regional Growth Strategy (2017)	Seattle 2035 (2019)	Downtown Core Area Plan (2011)	General Plan (2003)	Boulder Valley Comprehensive Plan (2017)	Eugene-Springfield Metropolitan Area General Plan (2015)
Downtown Plan (2014)	Master Transportation Plan (2008)	Transportation 2040 (2012)	Move Seattle (2015)	Pedestrian Master Plan (2008)	Downtown Area Plan (2012)	City of Boulder Transportation Master Plan (2014)	Envisioning Eugene Comprehensive Plan (2017)
Bicycle Comprehensive Plan (2014)		Cycling for Everyone (2011)		Downtown Public Realm Strategy and Streetscape Plan (2017)	Climate Action Plan (2009)	Boulder Access, Management & Parking Strategy (2018)	Eugene 2035 Transportation Plan (2017)
Pedestrian Comprehensive Plan (2012)		Downtown Eastside Plan (2014)		Bicycle Master Plan (1995)	Streets and Open Space Improvement Plan (2010)	Transportation Report on Progress (2018)	Downtown Plan
Transportation Report on Annual Mobility (2015)		Pedestrian Study (2002)		BCTransit Future Plan (2011)		Downtown Design Guidelines (2016)	Climate and Energy Action Plan
				Regional Transportation Plan (2014)		Boulder Bike Sharing Annual Report (2018)	

Appendix B: Berkeley, California

TRANSPORTATION

Transportation Division

Bicycle Boulevard Design Tools and Guidelines
Public Review Draft Report

Note: Documents are .pdf format. For .pdf format, download Adobe Acrobat Reader for free. When finished installing the Adobe Reader return to this page to view the documents.

Download Adobe Acrobat Reader for free

Cover Sheet and Detailed Table of Contents pdf

Chapter 1: Introduction pdf
Background
Report Overview
Development of Report
Purpose of a Bicycle Boulevard
Goals and Objectives
Selection of Streets for Bicycle Boulevards
Benefits of Bicycle Boulevards

Chapter 2: Existing Conditions pdf
Consultant Field Review
Bowditch/Hillegass Bike Boulevard
California/King Bike Boulevard
Channing Way Bike Boulevard
Milvia Bike Boulevard
Ninth Street Bike Boulevard
Russell Street Bike Boulevard
Virginia Street Bike Boulevard
Additional Bicycle Boulevard Issues Identified by the Public

Chapter 3: Issues Summary pdf

Chapter 4: Toolbox and Sample Bike Boulevard Layout pdf
Overview
Design Guidelines
(Note: The pdf formats does not include ALL illustrations.)

Chapter5: Review of Impacts of Traffic Calming Devices pdf
Impacts on Speed
Impacts on Volume
Impacts on Collision Rates

Chapter 6: Preliminary Implementation Plan pdf

Overview
Implementation Approach
Priority Recommendations
Recommended Phasing Plan
Outstanding Issues Raised by the Public
Coordination with Other Projects
Maintenance of Bicycle Boulevards
Monitoring Phase

Appendices

Appendix A - only available in hard copy
Appendix B - summary of public comment from Fall of 1999 pdf
Bicycle Boulevard Workshops

Transportation Division, 1947 Center Street, 4th Floor, Berkeley, CA 94704
Questions or comments? Email: transportation@cityofberkeley.info Phone: (510) 981-7010
(510) 981-CITY/2489 or 311 from any landline in Berkeley
TTY: (510) 981-6903

TRANSPORTATION

Transportation Division

Bicycle Boulevards in Berkeley

If you bike, walk, drive or take transit around Berkeley, you have probably noticed the bicycle boulevard signs and pavement markings. Identifying the streets with these signs and legends is just the first phase of creating a network of bicycle boulevards. The City is now engaged in the second phase of implementation - improving the safety and convenience of the bicycle boulevards, including the crossings at busy streets.

Check out the short video explaining Berkeley's boulevard system. Street Films: Berkeley's Bicycle Boulevards

Current Projects

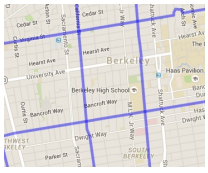
The City is working on the following projects to improve bicycle boulevards:

- Hillegass/Ashby Intersection: This intersection is difficult to cross for people biking or walking. The City is working with Caltrans, which must approve any changes to Ashby (a state highway), to improve this crossing.
- Ninth Street connection to Emeryville.

What is a Bicycle Boulevard?

A bicycle boulevard is a low-speed, low-volume street which has been optimized for bicycle traffic. Bicycle boulevards discourage cut-through motor-vehicle traffic but allow local motor-vehicle traffic. They are designed to give priority to people biking as through-going traffic.

The Bicycle Boulevard Network



Seven boulevards make up the bicycle boulevard network. Each is named after the street that it entirely, or in large part, travels along. Click here for an interactive google map showing the bicycle blvd network and major destinations. Click

Signage System

The system includes seven sign types and one pavement legend, each serving a specific purpose. See descriptions and photos of them here.

here to download a pdf description of each route with a list of destinations.

Photos of Bicycle Boulevard Treatments

The adopted Bicycle Boulevard Design Tools and Guidelines Report describes the tools that could be used on the bicycle boulevards to slow traffic and to create safer crossings at major streets. Many of these tools, such as traffic circles and specialized traffic signals, are already being used on streets throughout Berkeley.

Published Documents

Bicycle Boulevard Design Tools and Guidelines Report (April 2000)

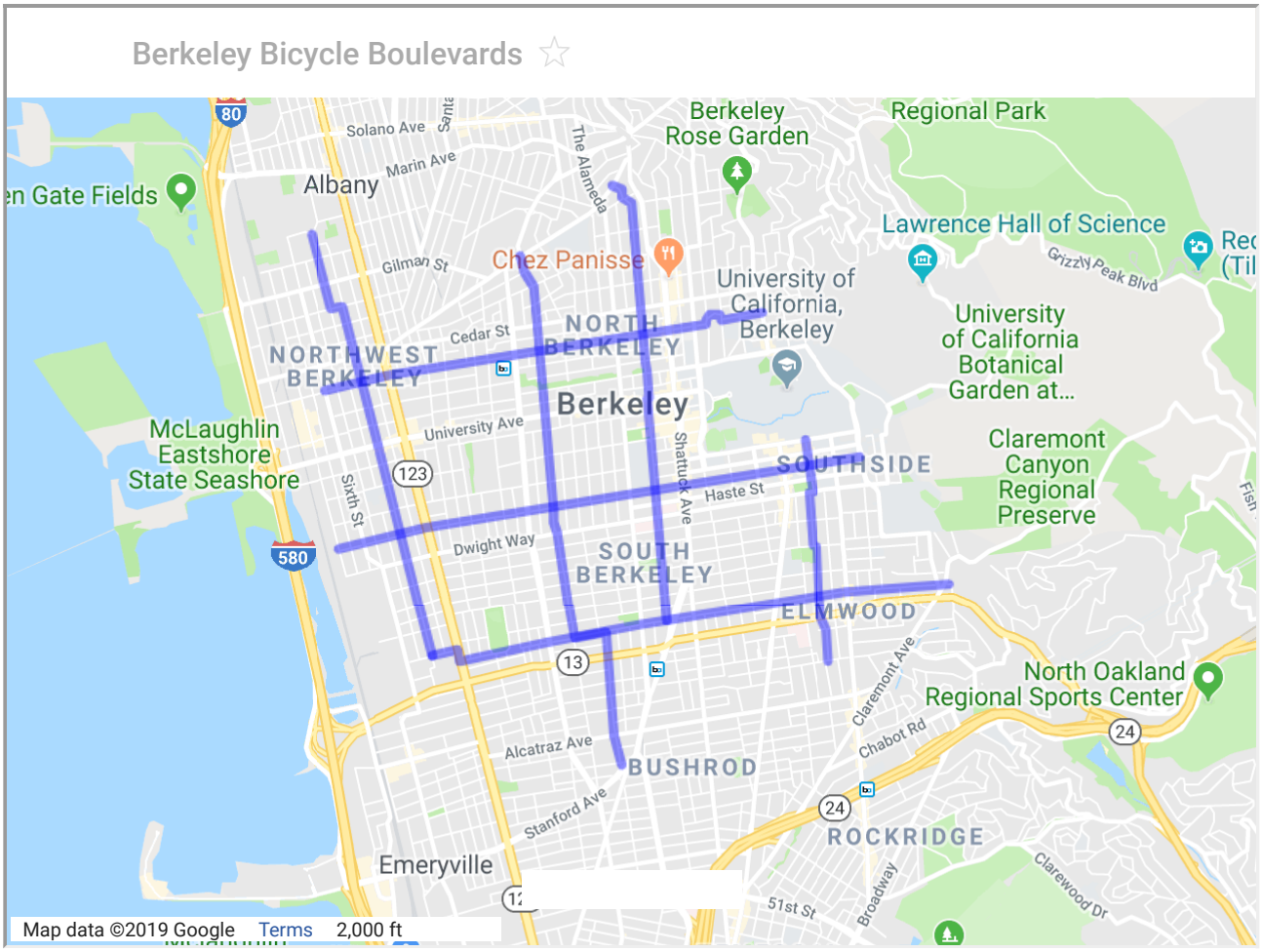
Berkeley Bicycle Boulevard Map

Planning & Implementation History

Describes how the bicycle boulevards were developed, what has been done on them to date, and how the City has funded their implementation.

Report Problems on Bicycle Boulevards

Have you noticed a bicycle boulevard sign that is missing or has been tagged? Is there debris or a new pothole on a boulevard? Please let us know!



Comments on Bicycle Boulevards

Contact the Office of Transportation at (510) 981-7010, TDD: (510) 981-6903 or by email.

Transportation Division, 1947 Center Street, 4th Floor, Berkeley, CA 94704
Questions or comments? Email: transportation@cityofberkeley.info Phone: (510) 981-7010
(510) 981-CITY/2489 or 311 from any landline in Berkeley
TTY: (510) 981-6903

BIKES

Overview Map Meet Our Bikes Bike Share for All Pricing Art Bikes

Bike Share for All

Bay Wheels offers all residents of the Bay Area an affordable, accessible and fun new transportation option.

Features

- One-time $5 Annual Membership ($5/month in second year)
- Bikes available 24/7/365 in San Francisco, Oakland, Berkeley, Emeryville and San Jose
- Membership includes first 60 minutes of each trip

• Rides longer than 60 minutes will result in additional fees of $3 for each additional 15 minutes or potential account suspension
• In-person enrollment at select locations (locations below)
• No credit or debit card required
• Clipper card compatible

Eligibility

Bike Share for All is available to Bay Area residents ages 18 and older who qualify for Calfresh, SFMTA (Low Income) Lifeline Pass or PG&E CARE utility discount.

Sign Up

Interested in the Bike Share for All program? Sign up here, and you will hear back from someone shortly.
SIGN UP HERE

Want to pay in cash?

- You can sign up at any of the locations listed here. Bring (1) a State-issued ID and (2) Calfresh card OR SFMTA (Low Income) Lifeline Pass OR Proof of PG&E CARE (utility bill).
- Enrollment hours are subject to change - please email marketing@baywheels.com before visiting a center for operational hours.
- Cash Payment Locations:

  • **Bay Area Metro Center**
  375 Beale Street
  San Francisco CA 94105
  Mon - Fri, 8 AM - 6 PM • Sat, 9 AM - 1 PM
  • **Oakland Public Library, Information Desk**
  125 14th Street
  Oakland, CA 94612
  Mon - Thu, 10 AM - 8 PM

• **Eastmont Public Library Branch, Information Desk**
7200 Bancroft Avenue, Suite 211
Oakland, CA 94605
Mon, 9 AM - 7 PM • Tue - Thu, 9 AM - 5:30 PM • Fri, 12 PM - 5:30 PM

• **Golden Gate Public Library Branch, Information Desk**
5606 San Pablo Avenue
Oakland, CA 94608
Mon, Thu, Sat 10 AM - 5:30 PM • Tue - Wed, 10 AM - 8 PM • Fri, 12 PM - 5:30 PM

• **West Oakland Public Library Branch, Information Desk**
1801 Adeline
Oakland, CA 94607
Mon, Thu, Sat 10 AM - 5:30 PM • Tue - Wed, 10 AM - 8 PM • Fri, 12 PM - 5:30 PM

• **Good Karma Bikes**
460 Lincoln Ave #25
San Jose, CA 95126
Tue - Fri, 11 AM - 7 PM • Sat - Sun, 11 AM - 6 PM

Need to talk to Bay Wheels?

- You can sign up at any of the locations listed here. Bring (1) a State-issued ID and (2) Calfresh card OR SFMTA (Low Income) Lifeline Pass OR Proof of PG&E CARE (utility bill).
- Enrollment hours are subject to change - please email marketing@baywheels.com before visiting a center for operational hours.
- Cash Payment Locations with a Bay Wheels staff member present:

• **Oakland Public Library, Main Lobby**
125 14th Street
Oakland, CA 94612
Wed, 12 PM - 4 PM

• **Berkeley Public Library, Main Lobby**
2090 Kittredge Street
Berkeley, CA 94704
2nd Monday of the month, 12 PM - 4 PM

DRIVER

RIDER

LYFT

DOWNLOAD

LYFT DRIVER APP

LYFT RIDER APP

California's Parking Cash-Out Law

This page last reviewed October 30, 2017

State law requires certain employers who provide subsidized parking for their employees to offer a cash allowance in lieu of a parking space. This law is called the parking cash-out program. The intent of the law is to reduce vehicle commute trips and emissions by offering employees the option of "cashing out" their subsidized parking space and taking transit, biking, walking or carpooling to work. For years, negative tax implications limited the implementation of the law. But in 1998, federal legislation fixed this problem.

The Air Resources Board has developed a guide that explains the law and answers the questions most frequently asked by employers.

Employers: The guide will help you determine whether you must implement a parking cash-out program.

Employees: If your employer pays for all or part of your parking, ask your employer if you are entitled to the parking cash-out choice.

California's Parking Cash-Out Law: An Informational Guide for Employers

- August 2009 (PDF)

If you have questions about the parking cash-out law, please contact Tom Scheffelin at (916) 327-7847.

Parking Cash-Out Case Study Research

This report presents eight case studies of employers who have complied with California's parking cash-out requirement. Cashing out reduced total vehicle emissions for commuting by 12 percent, with a range from 5 to 24 percent for the eight firms. Review or download the abstract or the report.

Commuter Choice Program

A federal program that complements parking cash-out is called the Commuter Choice Program. It provides for benefits that employers can offer to employees to commute to work by methods other than driving alone. To learn more about Commuter Choice, visit the following website:

Federal Transit Administration: Commuter Choice Web Page:
Commuter Choice Program.

Commuter Programs And Public Transportation

Public Works Transportation Division supports many commuter programs to help Berkeley residents, students and employees reduce their dependence on single-occupant automobile commuting. This web site provides information on the following:

The Tax Relief Action to Cut Commuter Carbon (TRACC) :

- Commuter Benefit Services for Employers
- Sample Enrollment Forms
- Frequently Asked Questions (PDF)
- Information about commute benefits in other languages (via SFEnvironment web site)

Commute Programs:

- Guaranteed Ride Home Program
- Ridematching for carpools and vanpools
- Transportation Programs at UC Berkeley

Transit Information:

- 511 Transit Information (or dial 511)
- Getting There on Transit: San Francisco Bay Area Route Maps and Popular Destinations
- Clipper, the Bay Area's Smart Card for Transit
- AC Transit Local and Transbay Bus Service
- Other Bus Services in Berkeley
- Paratransit Services
- Rail Service in Berkeley
  - Bay Area Rapid Transit (BART)
  - Capitol Corridor (train service from San Jose to Sacramento)
  - Connecting AMTRAK passenger rail services

Car Sharing

Airport Transportation

The City of Berkeley is committed to meeting its Climate Action Plan goals by creating a healthy and sustainable community. Commuter programs and public transportation are important components of the Climate Action Plan as they help us reduce greenhouse gas emissions. For more information about these and other other Climate Action Plan goals see: www.cityofberkeley.info/climate

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The Tax Relief Action to Cut Commuter Carbon (TRACC)

Effective December 2009, Berkeley Municipal Code 9.88 requires **employers with ten or more employees** to provide a commute program to encourage employees to use public transit, vanpools or bicycles.

Berkeley's Tax Relief Action to Cut Commuter Carbon, or TRACCC, gives employers several options - businesses can offer their employees commuter tax benefits as a payroll deduction, provide a subsidized benefit, or offer a combination of the two.

A commute program can reduce business and employee taxes by tapping into federal tax breaks on transit, vanpooling, and bicycle commute expenses. Employers can save up to 9% on payroll taxes, and employees up to 40% on their commute costs. A commuter benefit program works like other pre-

tax plans such as retirement, dependent care, and medical reimbursement, except that it's much simpler.

Many businesses work with their payroll provider or a third-party administrator to manage their program. Others choose to administer their program in-house, purchasing transit tickets or vouchers each month for their employees.

For information about the ordinance and how to comply, please contact our Online Service Center **or call 3-1-1 or 510-981-CITY (2489) and ask for the Transportation Division.**

The TRACC Ordinance

By November 2010, all employers in Berkeley with 10 or more employees (full-time, part-time, or temporary--anyone who works an average of 10 hours per week or more in Berkeley) must offer **one or more** of the following options:

1. **Pre-tax Transit/Vanpool:** Employer provides a payroll deduction program under existing Federal Tax Law 132(f), which allows employees to use up to $125 per month in pretax wages for transit or vanpool expenses. For more information, see IRS Publication 15-B, Employer's Tax Guide to Fringe Benefits; **or**
2. **Employer Paid Transit/Vanpool/Bicycle Benefits:** Employer pays for employee's transit, vanpool or bicycle commute expenses. (It is important to note that the bicycle benefit can only be provided as an employer-paid benefit and cannot be funded through employee pre-tax income. Employees cannot receive both a transit and bicycle benefit; they must choose one or the other.); **or**
3. **Employer Provided Transit:** Employer offers workers free shuttle service on a company-funded vehicle between home and workplace.

Commuter Benefit Services for Employers

Click here for information about commuter benefit services for employers, including vendors for transit passes, transit vouchers, and benefits administration.

511.org also provides assistance to employers who are looking to offer and actively promote commute alternatives. Click here for more information about 511's employer programs and resources.

Sample Enrollment Forms

Click to view a sample Commuter Benefits Employee Enrollment Form (Microsoft Word or pdf). Employers may customize this form and use it to enroll employees in their commute programs.

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Other Bus Services in Berkeley

- West Berkeley Shuttle from Ashby BART station to southwest Berkeley, operated by Gateway Transportation Management.
- Bear Transit is UC Berkeley's shuttle system, servicing the campus and vicinity. Anyone can ride the shuttles which connect campus, Downtown Berkeley, parking lots, Clark Kerr Campus, the Hill area, residence halls, Richmond Field Station, and north and south sides of campus.

- Berkeley Lab shuttles are for employee and guest use only and operate between Downtown Berkeley and Lawrence Berkeley National Lab.
- Alta Bates shuttles connecting Ashby BART and Alta Bates, and the Herrick and Alta Bates campuses.

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Car Sharing

Carsharing is easy in Berkeley. Several operators offer programs in Berkeley neighborhoods and throughout the Bay Area. Cars can be reserved online or by phone. Usage is typically charged by the hour, and billed monthly. Costs usually include fuel, insurance, and maintenance.

For carsharing providers in the area, see: http://www.511.org/links/default.asp

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Airport Transportation

- AirBART Shuttle
  510-577-4294 Call for info 24 hours
  Bus service between Coliseum BART station and Oakland Airport.
- Oakland International Airport
  510-633-2571
- San Francisco International Airport
  650-877-0227
- San Francisco Airport Ground Transportation
  800-736-2008

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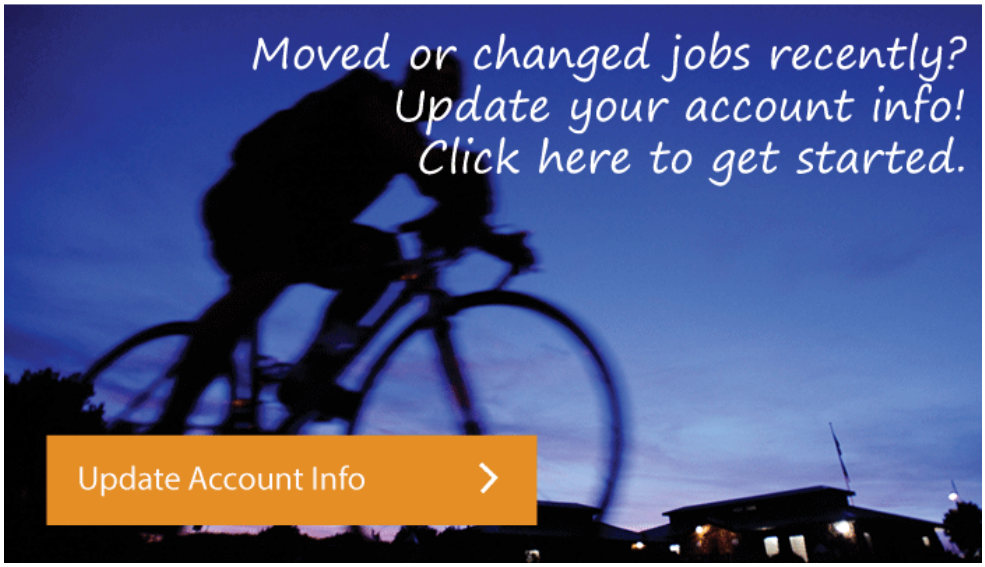
Translate

Alameda County Transportation Commission
GUARANTEED RIDE HOME



Insurance for Your Commute

The Alameda County Guaranteed Ride Home Program does just what it says. It guarantees you a free ride home from work if you have an emergency and you have made the effort to avoid commuting alone in your car. You can feel comfortable taking the bus, train, or ferry, carpooling, vanpooling, walking, or bicycling to work, knowing that you will have a ride home in the case of a qualifying unexpected circumstance that disrupts your commute home.

Click here for information about the reimbursement program!

Program Guidelines

Still have a question?
510-433-0320 grh@nelsonnygaard.com

ALAMEDA County Transportation Commission

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

The Guaranteed Ride Home program is a program of the Alameda County Transportation Commission and is generously supported by the Bay Area Air Quality Transportation Fund for Clean Air.

COMMUTE CHOICES
CONFIRM REGISTRATION
UPDATE YOUR ACCOUNT
RIDE REIMBURSEMENT
GRH PROGRAM REGISTRATION
ANNUAL REPORTS
REGISTRATION FORM (PRINT)
TRANSPORTATION OPTIONS
MARKETING MATERIALS
SUBMIT REIMBURSEMENT (WEB)
SUBMIT REIMBURSEMENT (PDF)

For Employees

All permanent full-time and part-time employees who are employed within Alameda County are eligible for this free program. Participants must register before using the program. Participants do not have to live in Alameda County.

Register Now

Submit Reimbursement

Update Account Info

For Employers

The Guaranteed Ride Home program is a free transportation benefit you can promote to your employees who get to and from work by a means other than driving alone, whether it's in an employer-provided shuttle, a carpool or vanpool, by transit, bicycling, or walking. Employers are **not** required to register in order for their employees to enroll, but we encourage promoting the program to full-time and permanent part-time staff. Interested employees can register on their own at any time.

Like us on Facebook and follow us on Twitter!

Frequently Asked Questions

Q: Can I use a Transportation Network Company (TNC) such as Uber or Lyft to provide my ride home? Yes. As of April 2016, the Alameda CTC Guaranteed Ride Home Program now reimburses guaranteed rides home taken with TNCs.

Q: What modes of transportation are approved for reimbursement in use of the GRH program? Guaranteed rides home taken by taxi, rental car, car share, public transportation, or Transportation Network Companies will be considered for reimbursement by program staff.

Q: If I commute through an app-based carpooling service (i.e. Scoop, Carma Carpooling, Lyft Carpool, etc.) and am not matched with a driver, am I eligible for a Guaranteed Ride Home? No. Guaranteed rides home are only eligible in emergency situations such as illness, injury, or the unanticipated break down of your usual commute vehicle. If an app-based carpooling service fails to match you with a ride to your work or home, the company that operates the carpooling service is responsible for addressing this issue.

Q: What about longer trips? We recommend using a rental car, car share, or public transit for trips over 20 miles to reduce the up-front cost borne by participants. Remember that fees over $125 per trip cannot be reimbursed. For more information, please click here.

Q: What if I don't have enough cash on hand to pay for a taxi ride? Many taxis now accept payment by credit

card. If this is not the case on your ride, you are allowed to make a special stop on your trip home to visit an ATM to pay for your ride.

Q: Can I still use the voucher I have from a previous year? No. As of January 1, 2015, vouchers are no longer be accepted.

Q: Can I use a car sharing service to provide my ride home? Yes. Rides taken using a car sharing service, such as ZipCar or City Carshare, are eligible for reimbursement. You must be a member of the car share company to rent a car through their service.

Q: Can I enroll in the program and use it for a ride home on the same day? We highly recommend registering if you think you might use the program in the future. This will help you become familiar with the program in advance. However, if your situation qualifies, then you may register and use the program on the same day.

Q: Can I use the program if there is a transit delay or strike? No. Unfortunately, the program can only be used for personal, unexpected emergencies. For a list of program restrictions, please click here.

General Overview
Employers
Residential Communities
Colleges
Client Information

EasyPass

AC Transit's EasyPass is a low-cost way for East Bay employers, residential developments, and colleges to reduce their environmental impact while saving their employees, residents, and students from the expense and hassle of driving and parking. EasyPass is a group transit benefit that offers bus passes anywhere AC Transit goes — anytime!

For as little as $5-$17 a month per participant, organizations can make sure their employees, residents, or students have unlimited access to a transportation alternative that serves the East Bay, San Francisco, and the Peninsula.

EasyPass works like an insurance plan — by paying for a large group of program participants, the per-participant costs are shared. All the group's participants have an opportunity to use their EasyPass, whether they're daily AC Transit riders, use the service occasionally, or are completely new to public transit, meaning that you'll be able to provide your program's participants with a high-value benefit at a minimal cost.

To find out how EasyPass can work for you, visit our page for employers, view our site for residential communities, and learn about our program for colleges and universities.

(/)

About LAZgo

LAZgo lets you reserve and pay for hourly and event parking before you arrive, so we've always got a space for you!

Here's how to use LAZgo in three easy steps:

1. Tap “Find Parking Near Me” on www.lazparking.com (http://www.lazparking.com/) or type a location like “Fenway Park”. You can also use the LAZgo widget on an event or venue’s website.
2. Pay and guarantee your parking spot with a few simple taps. You don’t need to register (but it speeds things up for next time). You’ll get an email with a link to view or print your Parking Pass.
3. Your Parking Pass has GPS directions to the LAZ location. Scan your pass at the entrance, or show it to the friendly attendant and then park your car – it's that easy!

LAZgo Help (/find-parking/about-lazgo/i-need-help-making-a-purchase)

Got questions? Find answers to some of the most frequently asked questions about using LAZgo.
I need help making a purchase (/find-parking/about-lazgo/i-need-help-making-a-purchase)
I need help with an existing reservation (/find-parking/about-lazgo/i-need-help-with-an-existing-reservation)

LAZ Parking is dedicated to your privacy and safety while you're online. Please read the following information to learn more about how we work with you while you're visiting our website or making a parking reservation.

Privacy Policy (/find-parking/about-lazgo/privacy-policy)

Your privacy is important. Here's how we respect it. Read More (/find-parking/about-lazgo/privacy-policy)

Terms & Conditions (/find-parking/about-lazgo/terms-and-conditions)

Familiarize yourself with our important Terms and Conditions. Read More (/find-parking/about-lazgo/terms-and-conditions)

TRANSPORTATION

Transportation Division

Parking Meters

The City of Berkeley uses parking meters as a parking management tool, primarily in commercial areas and around public spaces or facilities that are major trip generators. Meters are typically used to improve access, promote commercial activity, and discourage long-term car storage. The City may adjust a meter's hourly rate and/or limit the amount of time one may park in a metered parking space to encourage turnover and increase parking availability for short-term visitors and customers. Parking customers interested in long-term parking (over 2-hour, all day, or commuter parking) may park in the City's off-street parking garages and lots or goBerkeley Value pricing areas around downtown Berkeley and the Southside/Telegraph areas.

Parking meters in Downtown Berkeley, Southside/Telegraph, Northside, and the Elmwood are managed under the goBerkeley demand-responsive parking management program.

Over the years, parking meters have evolved from wholly mechanical devices to the state-of-the-art smart parking meters we use today. Currently, the City of Berkeley uses two types of meters: multi-space (IPS pay stations) and single-space, to monitor over 3,700 parking spaces. All meters accept Visa and MasterCard credit and debit cards, as well as nickels, dimes, quarters, and small one dollar coins.

For the City's guidelines on Disabled Parking Placard use, click here.

Chapter 14.52 of the Berkeley Municipal Code describes rules and procedures for the management and use of the City's parking meters.

Hours of Operation

On-Street Meters: In general, on-street meters are in operation from 9 AM to 6 PM Monday through Saturday including some holidays. There are exceptions to these general hours, so be sure to check the meters themselves and/or posted signs nearby to confirm hours of operation.

Metered Parking Lots:
Berkeley Way Lot: 7 AM to 10 PM, Monday through Saturday
Elmwood District Lot: 7 AM to 6 PM, Monday through Saturday

Pre-Pay and Sleep Modes: All City of Berkeley meters revert to “sleep” mode from the end of one operating shift until the start of operating hours the following business day. A “pre-pay” mode is available two hours before metered time begins. This allows you to park and pre-pay if you expect to remain parked at that spot once hours of operation begin. The meter will start charging time once the enforcement hours begin.

Parking Meter Holidays

Meters are not enforced on the following holidays:

New Year's Day, January 1 (Holiday observed on Monday if it falls on Sunday)
Martin Luther King Jr. Day, Third Monday in January
President's Day, Third Monday in February
Memorial Day, Last Monday in May
Independence Day, July 4 (Holiday observed on Friday if it falls on a Sunday)
Labor Day, First Monday in September
Indigenous People's Day, Second Monday in October
Veterans Day, November 11 (Holiday observed on Monday if it falls on Sunday)
Thanksgiving Day, Fourth Thursday in November
Christmas Day, December 25 (Holiday observed on Monday if it falls on Sunday)

goBerkeley: Increasing Parking Availability and Making Streets Safer for Everyone

goBerkeley is the City's data-driven, demand-responsive parking management program. Its aim is to improve the safety and ease of travel in metered parking areas by adjusting parking rates and time limits to better match local needs. goBerkeley raises or lowers parking rates to achieve 1-2 open spaces per block. Consistent parking availability means less circling, cleaner air, and safer streets for all.

goBerkeley is currently used to manage parking in four of the City's vibrant commercial districts: Downtown Berkeley, Northside, Southside/Telegraph, and the Elmwood.

News and Updates

On August 1st, 2019, new parking rates and time limits will go into effect in the Northside (Euclid/Hearst) parking meter area. Data collected in spring 2019 showed that the new $2.00/hour rate in the Premium zone has made it easier to find parking, even when demand is highest. However, parking in the 2200 and 2600 blocks of Hearst Avenue is still hard to find. As a result, **the 2200 and 2600 blocks of Hearst Avenue will be converted to Premium zones at $2.00/hour for up to two (2) hours**. A map of these changes is available here: goBerkeley Northside Rates and Time Limits.

On April 1, 2019, meter rates and time limits in Downtown Berkeley, Southside/Telegraph, and the Elmwood will be adjusted to maximize parking availability. Changes include:

- More available parking spaces in high-demand Premium zones in Downtown Berkeley ($3.75/hour), Southside/Telegraph ($3.25/hour), and the Elmwood ($2.75/hour)

- Value zones with the option to park for up to 4 hours (Downtown Berkeley) or 8 hours (Southside/Telegraph) at $2.50/hour
- Increased availability at the Elmwood Parking Lot ($1.25/hour)

The goBerkeley Way

goBerkeley uses a transparent, collaborative, and evidence-based approach to increase parking availability, find the right time limits for healthy turnover and customer flexibility, and make parking easier to understand. In establishing goBerkeley areas, staff talk to local businesses to better understand what time limits may be appropriate for each area's blend of customers and visitors. After analyzing parking activity, staff adjust meter rates to ensure that 1-2 parking spaces are always available, so drivers don't have to circle for a spot. goBerkeley also increases driver choice by lengthening time limits in some areas, providing legal parking alternatives for those who need to stay for longer periods of time. In goBerkeley areas, bright, clear signs provide simple instructions on how long to park and where to pay, reducing sidewalk clutter and enhancing the attractiveness of neighborhood commercial districts.

Pilot Project Results

goBerkeley began as a three-year pilot project to explore and test methods of reducing local traffic congestion, improving parking options, and promoting alternatives to driving one's own car. Results from the pilot project are available in the Berkeley City Council Information Report (5.7MB PDF) from December 16, 2014.

Feedback

Interested in more information about goBerkeley? Write to us at goBerkeley@cityofberkeley.info.

Parkmobile Pay-by-Phone Services

Paying for parking in Berkeley is now even easier! Using the **Parkmobile** service, parking customers are able to pay for parking on-the-go via a smartphone app or by phone.

The mobile app for iPhone and Android phones is available at Parkmobile's website. Customers may also initiate parking sessions by calling 1-877-727-5718. Once registered, users can also choose to receive custom alerts and reminders prior to the expiration of a parking session, and if applicable, remotely extend their parking session. Click here for a video overview of the Parkmobile service.

How to Register

1. Once you have downloaded the app, you will be asked to fill out basic information.
2. You have the option to continue with registration or explore the app and complete registration at a later time.
3. If you decide to complete registration, you will be asked for your license plate number. You can add up to five (5) license plate numbers per account.
4. Lastly, you will be asked to enter payment information.

How to Pay by App

1. Once you have registered your account, enter the appropriate zone code for your parking space, which is located on bright green stickers on the meters. At single-space meters, you will be asked to provide a zone code and space number, both of which are included on the sticker.
2. Choose the duration you wish to park.
3. Confirm your information, including location, license plate number, and payment method.

4. Upon final confirmation, a ticker will begin counting down your time remaining. You may also be given the option of adding an alert prior to the expiration time, which will give you the option of adding more time to the meter -- up to the maximum posted time limit.
5. Note: Your payment status is immediately transmitted to Parking Enforcement. Single space meters will NOT display your paid time, and the light will continue to flash red.

How to Pay by Phone

1. Dial 1-877-727-5718. We recommend registering an account in advance (either online at Parkmobile.io or by calling) for a quick and easy parking transaction.
2. Enter the appropriate zone code for your parking space, located on bright green stickers on the meters.
3. Choose the duration you wish to park.
4. Agree to the charged amount.

Time Limit Enforcement

Time limits are strictly enforced and may not be extended by adding more money after the posted maximum time limit has expired. In other words, “feeding the meter” is illegal per BMC 14.52.060. Use these links for information on other local parking restrictions and California Vehicle Codes.

Parking Before Payment, or After Time has Expired
It is unlawful to occupy a metered parking space without paying. Per BMC 14.52.040, drivers must pay for parking immediately after occupancy of a parking space. And per BMC 14.52.050, it is also unlawful to remain parked at a single-space meter or pay-and-display parking space after the meter or your dashboard receipt has expired. Only stay for the time you pay!

Broken Meters
Parking at a space served by a broken or inoperable single space meter or pay & display station is limited to the posted time limit. It is not legal to park in a space served by a broken meter or a pay & display station longer than the posted time limit.
To report a broken meter or pay & display station, call 311 or (510) 981-CITY (2489), and provide the meter or pay station number.

Parking Meter Rates

- goBerkeley Program Areas and Rates
- Other Citywide Parking Areas and Rates
- Payment Increments and Credit/Debit Card Minimum Payment
- Parking Meter Revenue

The City of Berkeley has two rate structures for parking meters:

- In goBerkeley program areas (approximately 2,000 parking spaces in Downtown, Southside/Telegraph, Northside, and the Elmwood) hourly rates range from $1.25/hour in Value areas to $3.75/hour in Premium areas. Premium and Value areas are identified using color-coded signs (Premium areas are blue, and Value areas are green).

- In all other metered areas, the hourly rate is $1.50. Other metered areas in Berkeley include the Gourmet Ghetto, Solano Avenue, Telegraph Avenue, Claremont & Ashby, College & Alcatraz, San Pablo Avenue, the Gilman District, and University Avenue.

goBerkeley Program Areas and Rates

Current goBerkeley program locations and rates are described below.

goBerkeley Area	Rate Zone	Parking Location	Hourly Rate	Maximum Time Limit
Downtown Berkeley	Premium	Hearst Avenue (North) to Bancroft Way (South), between Oxford Street (East) and MLK Jr. Way (West)	$3.75	2 hours
	Value	Bancroft Way (North) to Dwight Way (South), between Fulton Street (East) and Milvia Street (West) & Berkeley Way Parking Lot	$2.50	4 hours
Southside/Telegraph	Premium	Bancroft Way (North) to Durant Ave (South), between Piedmont Avenue (East) and Fulton Street (West) Durant Ave (North) to Dwight Way (South), between Bowditch St (East) and Dana St (West)	$3.25	2 hours
	Value	Durant Ave (North) to Dwight Way (South), between College Avenue (East) and Bowditch Street (West)	$2.50	8 hours
Northside (Euclid/Hearst)	Premium	Ridge Road (North) to Hearst Ave (South), from Le Roy Ave (East) and to Scenic Ave (West)	$2.00	2 hours
	Value	Hearst Ave (2200 and 2600 blocks) and Scenic Ave (1800 block)	$1.75	4 hours
Elmwood	Premium	Stuart Street (North) to Webster Street (South), between Piedmont Avenue (East) and Benvenue Avenue (West)	$2.75	3 hours
	Value	Elmwood Parking Lot	$1.25	3 hours

(Effective April 1, 2019.)

Other Citywide Parking Areas and Rates

Non goBerkeley program locations and rates are described below.

Metered Area	Metered Area Boundaries	Hourly Rate	Time Limits
North Berkeley (Shattuck Avenue)	Rose Street (North) to Hearst Avenue (South), between	$1.50	30 mins. to 2 hrs.

	Oxford Street (East) and Milvia Street (West)		
Solano Avenue	The Alameda (East) to Tulare Street (West), between Tacoma & Catalina Avenues (North) and Marin Avenue (South)	$1.50	30 mins. to 2 hrs.
Telegraph Avenue	Telegraph from Dwight Way (North) to Woolsey Street (South), to Regent Street (East) AND Regent Street between Ashby Avenue (North) and Prince Street (South) AND 2400 block of Blake Street	$1.50	30 mins. to 2 hrs.
Adeline/Shattuck	Ward Street (North) to Essex Street (South), between Shattuck Avenue (East) and Adeline Street (West)	$1.50	30 mins. to 2 hrs.
Claremont & Ashby	Russell Street (North) to Ashby Avenue (South), between Domingo Avenue (East) and Claremont Avenue (West)	$1.50	30 mins. to 1 hr.
College & Alcatraz	Vicinity of intersection of College Avenue & Alcatraz Avenue north of the Berkeley city line	$1.50	1 hour
San Pablo Avenue	San Pablo Avenue between Harrison Street (North) and Heinz Avenue (South)	$1.50	30 mins. to 2 hrs.
Gilman District	9th Street, 10th Street and Camelia Street south of Gilman Street	$1.50	30 mins. to 2 hrs.
Fourth Street	Fourth Street between Virginia Street (North) and Hearst Avenue (South)	$1.50	30 mins. to 2 hrs.

University Avenue	Hearst Avenue (North) to Addison Street (South), between MLK Jr Way (East) and 3rd Street (West)	$1.50	30 mins. to 2 hrs.

Payment Increments And Credit/Debit Card Minimum Payment

When using a credit/debit card payment option, all meters require a 12-minute minimum transaction time. All City of Berkeley meters accept coins, credit and debit cards. Coins do not require a 12-minute transaction minimum. The table below shows parking meter coin increments by meter rate.

goBerkeley Premium 2-Hour $3.25 or $3.75	goBerkeley Premium 3-Hour $2.75	Standard Up to 2 hours $1.50	goBerkeley Value 4-Hour or 8-Hour $2.50
1 Nickel = 1 min 1 Dime = 2 min 1 Quarter = 4 min	1 Nickel = 1 min 1 Dime = 2 min 1 Quarter = 5 min	1 Nickel = 2 min 1 Dime = 4 min 1 Quarter = 10 min	1 Nickel = 1 min 1 Dime = 2 min 1 Quarter = 6 min

Parking Meter Revenue

Revenue collected from on-street parking operations is used to support City services. Currently, parking meter revenue is used to fund Parking Enforcement operations of the Berkeley Police Department.

Meter Maintenance

The City's Public Works Department has a Meter Maintenance Team consisting of a Supervisor and 8 staff people who are responsible for the collection of revenues, as well as the maintenance and repair of the City's on-street meters. The Meter Maintenance Team is responsible for routinely replacing meter batteries, lubricating locks, maintaining meter identification numbers, replacing domes and removing graffiti from meters and poles.

Whenever the Meter Maintenance Team finds a vehicle parked at a malfunctioning meter, they initiate repair and place the maximum time on the meter. However, the maximum time you can park in a meter space (during enforcement hours) is the maximum time allowed if the meter were functioning (e.g.1 hour; 2 hours). Therefore, you run the risk of getting a ticket if you are parked at a malfunctioning meter longer than this allotted time – functioning or not.

If you have any questions for the Meter Maintenance Team, please use our Online Service Center, call 311, or (510) 981-CITY (2489).

How to Use Berkeley's Parking Meters

- Multi-Space Meters
- Single-Space Meters

Multi-space Pay Stations

IPS Pay Station machines accept 3 convenient forms of payment:

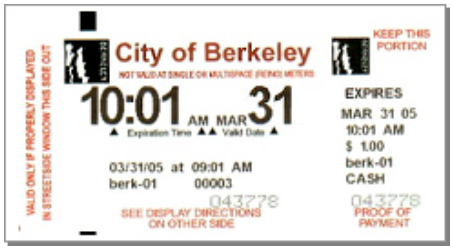
1. Coins (nickels, dimes, quarters, small one-dollar coins)
2. Credit card (Visa or Master Card) 12-minute minimum transaction required
3. Debit card (w/credit card logo) 12-minute minimum transaction required

Payment instructions, and hours of operation are posted at each pay station.

At the meter you need to:

1. Pay for the time you need to park.
2. If using credit/debit card, adjust time when prompted on screen.
3. Press the green button (“OK”).
4. Place your receipt ticket on the driver side dash of you vehicle (face up).
5. Return to your vehicle before your time expires.

Multi-space Pay Station Receipt Ticket



Single-Space Meters

Single space meters feature an illuminated display to view parking rates, hours, time limit and other important information.

Single space meters accept 3 convenient forms of payment:

1. Coins (nickels, dimes, quarters, small one-dollar coins)
2. Credit card (Visa or Master Card) 12 minute minimum transaction required
3. Debit card (with credit card logo) 12 minute transacation required.

Payment instructions, and hours of operation are posted at each meter.

At the meter, you need to:

1. Pay for the time you need to park.
2. If using a credit/debit card, adjust time when prompted on screen with ⊕ and ⊖ buttons.
3. Press green ok button.
4. Return to your vehicle before your time expires

Parking Meter Signs and Decals

goBerkeley Zones You can tell you are in a goBerkeley zone when you see signs like this:

Multi-space Pay Stations

On blocks with pay stations, signs are posted to direct users to "Pay to Park" with arrows pointing towards the closest pay station (Figure 1a). In non-goBerkeley parking areas, green and white regulation signs advise of the zone limits for areas (Figure 1b). If an arrow is not present on the zone limit sign, the limit is enforced for the entire block. Some locations use curb markings along with parking signs (Figure 1c).

Diagram 1a

Diagram 1b

Diagram 1c

In non-goBerkeley areas, "Pay Here for Parking" signs are posted above each pay station (Diagram 1d and 1e):

Diagram 1d

Diagram 1e

Informational Signs with enforcement rules

Restricted Parking Rules - Sample at Farmers Market Location

Single-Space Meters

Parking rate and hours of operation information is displayed on screen at the head, or crown, of the meter as shown below (Diagram 4a).

Diagram 4a

Diagram 4c

Transportation Division, 1947 Center Street, 4th Floor, Berkeley, CA 94704
Questions or comments? Email: transportation@cityofberkeley.info Phone: (510) 981-7010
(510) 981-CITY/2489 or 311 from any landline in Berkeley
TTY: (510) 981-6903

DOWNTOWN BERKELEY BART PLAZA ACTIVATION PLAN **10/11/2018**

On October 18, 2018, the Downtown Berkeley BART Plaza will open after a $13 million renovation, including a new main entrance, plaza pavers, sound and light poles/system, catenary lighting, trees, and landscaping. Downtown Berkeley BART Plaza is the heart of the Downtown and a transit portal for the City. The programing of the plaza presents a once in a generation opportunity to establish a vibrant pubic space that is welcoming and engaging for all Berkeleyans and visitors, and also a place to showcase the creative and artistic soul of the City. This Activation Plan was developed by the Downtown Berkeley Association (DBA) in close association with City of Berkeley staff, Civic Arts Commission (CAC), and in consultation with Mayor Jesse Arreguin and Councilmember Kate Harrison.

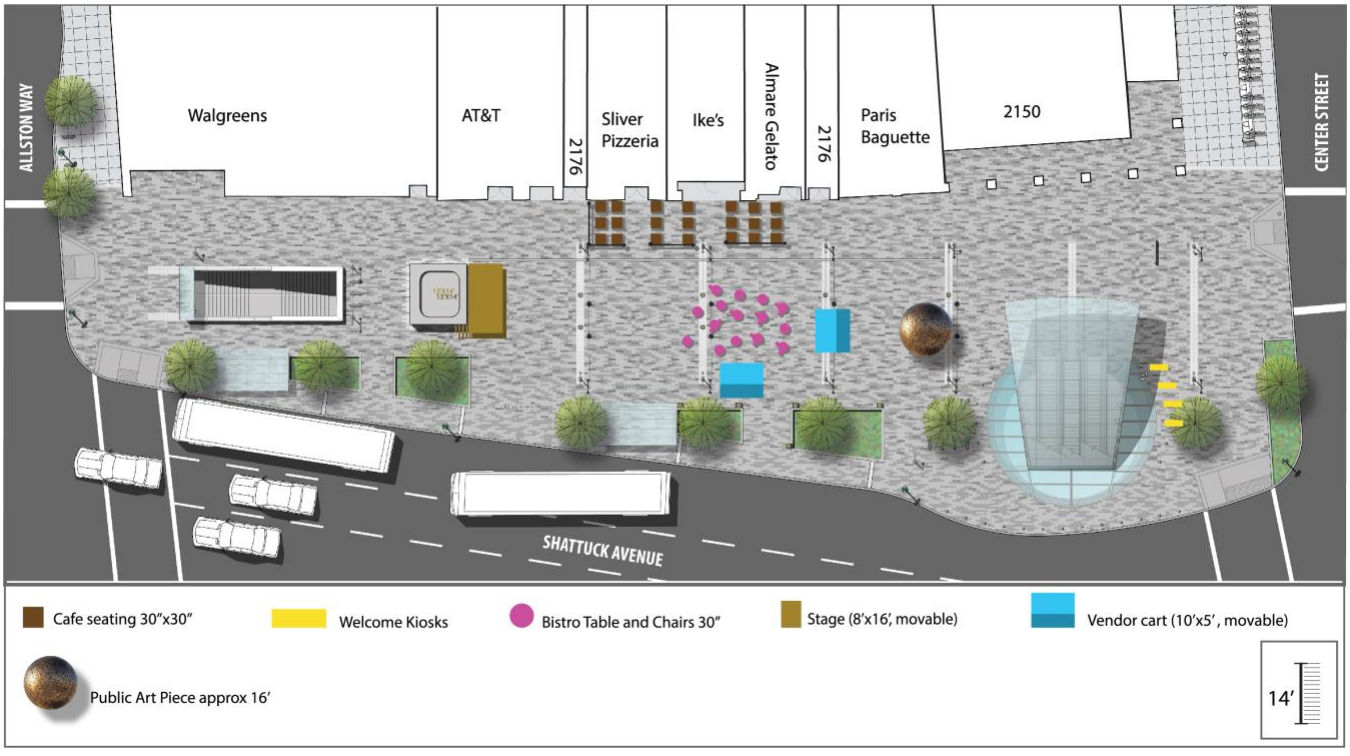
The **BART Plaza renovation project** is slated for completion in October 2018 with the following elements:

A. A **new main steel and glass entrance** surrounded by a stunning glass floor that will illuminate from below at night, with a glass staircase into the station
B. **New entrances at Allston and Addison** with similar glass and steel design
C. New **high quality pavers** throughout the plaza with granite-like appearance
D. Sleek **aluminum clad ventilation shaft**, which will be the backdrop for Berkeley LIVE! programming
E. **Nine new trees** and **three landscape areas**
F. **Eight sound and light poles** with catenary overhead LED lighting between poles
G. **Two new bus shelters** with similar steel and glass design

This Activation Plan (in addition to the above Plaza project) entails the following components:

1. **Large Temporary Sculpture** funded and selected by Civic Arts Commission
2. **State of the Art Sound System** funded and selected by Civic Arts Commission
3. **Ambient Sound Installation** funded and selected by Civic Arts Commission
4. **Berkeley LIVE!** temporary stage and programming - managed by DBA
5. **Welcome Kiosk** on the north side of main entrance with maps and info about Downtown Berkeley, the City, and UC Berkeley
6. **Sidewalk Seating** managed by merchants (Paris Baguette, Almare Gelato, Ikes, and Sliver Pizzeria)
7. **Bistro Tables and Chairs** in the middle of Plaza managed by DBA and for public use
8. **Two nonprofit food vendors:** Ecology Center's *Berkeley Farm Stand*, and *1951 Coffee Kiosk*

DOWNTOWN BERKELEY PLAZA ACTIVATION PLAN MAP



Plaza Activation Plan components (in addition to the BART Plaza design) are as follows:

1. Large Sculpture

The Civic Arts Commission selected a piece by Berkeley-based artist Michael Christian for its first temporary art installation on BART plaza. This stunning sculpture, called *Home,* is an oversized desktop globe made of multiple layers of steel with cutout imagery of street maps from around the world. At night, light from within the piece casts shadows of these maps on the surrounding plaza. Whether seen during the day or at night, the artwork communicates the perspective and influence of Berkeley-a small city with global reach!

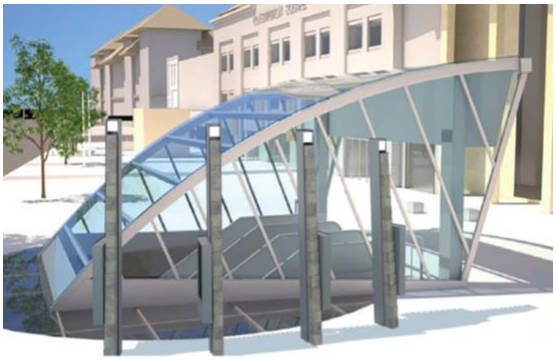
2. State of the Art Sound System

The Plaza includes a state-of-the-art Meyers Sound system on eight sound and light poles that will help activate the Plaza. The system can also be augmented for directional sound during live performances.

3. Ambient Sound Installation

The Civic Arts Commission (CAC) has commissioned ten sound art compositions by different artists for ongoing programming on the Plaza's multi-channel sound poles. The first sound art installation to be presented on the Plaza is an original site-specific composition by local composer and electronic musician, Chris Brown, called *Flow in Place*. With the multi-channel audio environment the public will be engaged in inspiring and provocative ways.

4. Welcome Kiosk



The Downtown Berkeley Association (DBA) in conjunction with Visit Berkeley and UC Berkeley Chancellor's Community Partnership Fund is installing a Welcome Kiosk designed by Square Peg Designs on the north side of the new entrance. The kiosk will consist of four pylons, with four illuminated light boxes with the following material: map of Downtown Berkeley, map of UC Berkeley Campus, list of Downtown cultural happenings, and Visit Berkeley information. The kiosk will also have slots for brochures and maps of Downtown etc. The kiosk is constructed by Berkeley builder Alex Nolan of Ohmdrone and will be installed by October 27th.

5. Sidewalk Seating

Plaza plans allow for up to 11.5 feet of sidewalk seating in front of storefront cafes (e.g., Sliver Pizzeria, Ikes, Almare Gelato and Paris Baguette). Seating will be managed and maintained by merchants or property owners, as per Berkeley sidewalk seating regulations.

6. Bistro Tables and Chairs

The DBA has purchased and will make available to the general public 32 chairs and 16 tables by Fermob Bistro in the middle of the Plaza near the anticipated vendors. The DBA will bring in tables and chairs at night and during special event programming, and/or when other issues arise in the Plaza.

7. Two Nonprofit Food Vendors

The City conducted an RFP process for a one-year pilot program for two mission-driven nonprofit vendors to sell food and/or drink that activates the public space and provides useful healthy products. 1951 Coffee and the Ecoolgy Center were the slected vendors. The Ecology Center's *Berkeley Farm Stand* will open on October 19, making available fresh fruits and vegatables. The *1951 Coffee Kiosk* is expected to open in early November. Each booth will be approximately 10x10 in size, and located near power and water in the Plaza. The DBA is assisting the vendors with storage, waste disposal, and other services as needed.

8. Berkeley LIVE! On The Plaza

The DBA, with support of the CAC and the City, on a pilot basis will be programming music and other artistic performances and community activities under the name of Berkeley LIVE!. Performances will take place on a temporary stage in front of the newly sheathed ventilation shaft, and make use of the eight sound poles, as well as temporary directional sound when needed. Taylor Street Production (a Berkeley-based family owned company) will assist the DBA with an open transparent selection process, based on guiding principles of *Equity, Quality, Community, and Frequency* of programming. Berkeley LIVE! will kick-off with BART Plaza Opening Week on Oct 18-21.

Application, Review and Installation Process for In-Street Bike Parking Corrals

OVERVIEW - What is an on-street bicycle parking corral?

Description

An on-street bicycle parking corral ("corral") is a group of bike racks installed adjacent to the curb in the parking lane of the roadway. The area is dedicated for bicycle parking and is differentiated from other uses of the parking lane by pavement markings, wheel stops, delineators, and/or flexible bollards. Corrals can be installed where the demand for bike parking is higher than can be reasonably accommodated on the sidewalk without impeding the pedestrian walkway and/or creating accessibility issues for adjacent parking spaces.

CORRAL APPLICATION, EVALUATION, AND INSTALLATION PROCESS

Corrals will be installed in response to an Application from merchants or property owners, as detailed below.

Definitions

"Applicant," below, refers to the merchant or owner of the property immediately adjacent to the proposed corral. This is the street address location for the corral. Only merchants or property owners may submit an application for a bike corral in front of their street address.

"Maintenance Partner," below, refers to the individual or organization entering into the Maintenance Agreement with the City of Berkeley. Typically this will be the Applicant, however, an adjacent merchant or property owner or the local merchants' group or Business Association may also agree to maintain the corral on behalf of the Applicant.

Corral Application Process

1. Applicant completes an **On-Street Bicycle Parking Corral Application** ("Application") and an **On-Street Bicycle Parking Corral Maintenance Agreement** ("Maintenance Agreement") and submits copies of both (not originals) to the Bicycle & Pedestrian Program at EAnderson@ci.berkeley.ca.us or (510) 981-7062.
2. City staff conducts a preliminary screening survey of the site and may contact the applicant with follow-up questions. At this stage, replacement of yellow zones, automobile parking, and other activities that will require the Applicant to perform community outreach will be ascertained.
3. If the location is preliminarily approved, Applicant conducts outreach to adjacent businesses and/or property owners on the block face where the proposed corral is to be located. As appropriate, Applicant uses additional signature blocks on the Application to document support for the corral.
    a. In cases where an existing yellow, white, green, or blue zone will be converted to a corral, the Applicant must get signatures from the merchants or property owners to either side of the street address where the proposed corral is to be located.

b. In cases where automobile parking will be converted to a corral, the Applicant must get signatures from a majority of merchants or property owners on the same block face where the proposed corral is to be located. Majority is defined as 50% of the merchants or property owners +1.

4. Public Works Department staff conducts a detailed field survey to determine final site suitability. Detailed measurements of the corral area and adjacent parking spaces and travel lanes are taken and observations of bike parking demand and traffic patterns are made.

   a. *If a corral is recommended*, staff will draft a basic dimensioned site plan and circulate it, internally, for review by Traffic Engineering and Public Works Right of Way staff. Next, the drawing is shared with the Applicant. The corral will not be installed until the Applicant has approved the proposed layout.

   b. *If a corral is not recommended*, the Applicant and requestor will be notified and the reason for denial will be given. Reasons for denial include but are not limited to, no evidence of demand, poor sight lines, and deteriorated pavement on which bike racks cannot be mounted. If the location is denied, staff will evaluate the installation of sidewalk racks.

5. Once the Applicant has approved the corral, Public Works Department Staff posts a public notice at the proposed location and distributes notices to all property owners and/or merchants on the block face where the corral is to be located.

6. If no insurmountable stakeholder objections are presented, the corral will be scheduled for installation by an outside contractor selected through a bid process. (See the next section for an explanation of the process to resolve disputes.) The timeline for installations is subject to contractor availability, weather, materials in stock, and other factors.

7. Maintenance Agreement must be renewed each year on January 1st. If the fronting business closes or changes hands the Sponsor is responsible for notifying the Public Works Department and a new Maintenance Agreement must be signed and include all pertinent information about the new fronting business.

Appealing the decision to approve or reject a corral

At any time during the application review process, a stakeholder may present objections to City staff. Objections will be resolved on a case-by-case basis.

The following objections may be the basis for an appeal:

- A nearby location would better serve the same business(es) and the fronting business or property owner (or another Maintenance Partner) is willing to maintain the corral.
- The design doesn't meet the City's guidelines.
- A different number of racks than proposed should be installed.
- The corral will cause a demonstrable hardship to nearby businesses. Evidence of hardship must be provided to the City by the business or individual impacted by the proposed corral.

The following objections will not be considered as they have been addressed during the design and outreach process, or they are subjective:

- The corral is dangerous.
- The corral is ugly.
- The corral is unnecessary.
- The corral causes a hardship that cannot be proved or demonstrated.

If a location is rejected by City staff, the Applicant may appeal the decision by demonstrating how the location meets the goals and guidelines of the In-Street Bicycle Parking Corral Program.

Grounds for Removal of a Corral

At any time following installation of the corral, a stakeholder may present objections to City staff. Objections will be resolved on a case-by-case basis.

The following objections may initiate an investigation into removing a corral:

- The corral is causing a demonstrable hardship to nearby businesses. Hardship must be proved by the business or property owner or individual who is or may be impacted by the corral.
- The corral is in an unsafe location.
- The corral is not being used.

The following objections will not be considered as they have been addressed during the design and outreach process, or they are subjective:

- The corral is dangerous.
- The corral is ugly.
- The corral is unnecessary.
- The corral causes a hardship that cannot be proved or demonstrated.

City of Berkeley Bicycle Corral Application

Proposed Corral Location Street Address: _____

Name of fronting business: _____

Name of fronting business owner: _____

Property owner name: _____

Property owner mailing address: _____

Application is hereby made to the City of Berkeley Public Works Department to install an on-street bicycle parking corral at the address listed above.

Signature (Applicant):_____ Date: _____

Print Applicant Name: _____

Applicant is: ___Fronting business owner ___ Property owner

Applicant phone #: _____ Applicant email address: _____

If multiple businesses occupy the fronting property and applicant is not the property owner, please include additional signatures:

Signature (business owner):_____ Date: _____

Print Name: _____ Business name: _____

Contact phone #: _____ Contact email address: _____

Signature (business owner):_____ Date: _____

Print Name: _____ Business name: _____

Contact phone #: _____ Contact email address: _____

Upon receipt of the signed application and maintenance agreement, Public Works Department staff will contact the applicant to discuss outreach next steps.

Outreach Approval Signatures (complete after preliminary City approval of Application):

If an existing yellow, white, green, or blue zone will be converted to a corral, please provide signatures from the merchants or property owners to either side of the street address of the proposed corral:

Signature (business or prop. owner):_____ Date: _____

Print Name: _____ Business name: _____

Business address: _____

Contact phone #: _____ Contact email address: _____

Signature (business or prop. owner):_____ Date: _____

Print Name: _____ Business name: _____

Business address: _____

Contact phone #: _____ Contact email address: _____

If automobile parking will be converted to a corral, the Applicant must obtain signatures from a majority of business or property owners on the same block face where the proposed corral is to be located. Majority is defined as 50% of the business or property owners +1 (use additional pages if necessary):

Signature (business or prop. owner):_____ Date: _____
Print Name: _____ Business name: _____
Business address: _____
Contact phone #: _____ Contact email address: _____

Signature (business or prop. owner):_____ Date: _____
Print Name: _____ Business name: _____
Business address: _____
Contact phone #: _____ Contact email address: _____

Signature (business or prop. owner):_____ Date: _____
Print Name: _____ Business name: _____
Business address: _____
Contact phone #: _____ Contact email address: _____

Signature (business or prop. owner):_____ Date: _____
Print Name: _____ Business name: _____
Business address: _____
Contact phone #: _____ Contact email address: _____

Signature (business or prop. owner):_____ Date: _____
Print Name: _____ Business name: _____
Business address: _____
Contact phone #: _____ Contact email address: _____

Signature (business or prop. owner):_____ Date: _____
Print Name: _____ Business name: _____
Business address: _____
Contact phone #: _____ Contact email address: _____

Signature (business or prop. owner):_____ Date: _____
Print Name: _____ Business name: _____
Business address: _____
Contact phone #: _____ Contact email address: _____

On-Street Bicycle Parking Corral Maintenance Agreement

1. Corral street address: _____

2. Party agreeing to maintain corral:

___Fronting business owner ___ Property owner ___ Other Maintenance Partner

Name: _____

Contact person (if different from above): _____

Mailing address: _____

Phone #: _____ Email address _____

By signing below:

a) The fronting Business Owner, Property Owner, or the Maintenance Partner, as applicable, for the proposed corral agrees to:
   i. Sweep, remove, and dispose of debris in the corral and along the adjacent curb frontage (up to 20 ft in both directions) on both sides of the bicycle corral in the roadway at least every other week, and more frequently as needed to prevent the accumulation of debris.
   ii. Visually inspect the corral on a weekly basis, and report any problems such as abandoned bikes, damage to bollards or racks, etc. to City of Berkeley 311.

b) The fronting business or property owner acknowledges that the corral is for public use, and not for the exclusive use of any particular business.

c) If resident complaints are received, the Transportation Division will notify the maintenance agreement holder (fronting business, property owner or Maintenance Partner) and may refer the complaints to Code Enforcement in the City Manager's Office for review.

Signature: _____

Print Name: _____ Date: _____

Return by mail or email (attachment w/ scanned signatures required) to:

City of Berkeley, Public Works Department, Transportation Division

1947 Center Street, 3rd Floor, Berkeley, CA 94704

Email: EAnderson@ci.berkeley.ca.us

Questions? Contact us by phone at (510) 981-7010

CORRAL LOCATION REQUIREMENTS AND DESIGN GUIDELINES

Corral locations are identified by City staff or based on applications from merchants or property owners. Locations are subject to the support of the fronting business and/or property owner(s), and will be installed only where the fronting business, property owner, or other Maintenance Partner (Business Association, etc) signs a Maintenance Agreement. The installation of a corral prevents City street-sweeping vehicles from accessing the parking lane, therefore the agreement requires the maintaining party to hand sweep the corral area and dispose of debris, as well as monitor the corral's condition on an ongoing basis. Corrals in locations where the demand for bicycle parking exceeds available space for sidewalk racks will get the highest priority for installation.

Corrals may be installed at any location on the block so long as adequate space for buffering (typically six feet—three feet on each side) is available. Corrals at street block corners have the benefit of creating de facto curb extensions, shortening the street crossing distance for pedestrians, and improving sight lines for motorists turning into traffic from side streets.

Bicycle corrals may be installed in existing red zones (where deemed safe). They may also replace green, white, yellow, or blue zones or metered or unmetered parking stalls. In such cases, the process for developing consensus for converting existing automobile parking (zoned, metered, unmetered) to bicycle parking should be led by the applicant, as detailed in the Application materials.

Placement Standards:

- Bike corrals should be placed in red curb zones where possible.
- Corrals should not be placed in yellow, white, green, or blue zones unless the adjacent property owners or businesses have requested it be in such a zone and agree to relinquish the zone when the corral is installed.
- Corrals are prioritized at corners because they serve as de facto curb bulbouts for pedestrians. They should, however, be located five feet behind the crosswalk, subject to Traffic Engineering approval.
- Corrals should be located at least five feet from driveways, subject to Traffic Engineering approval.

CORRAL ELEMENTS

Corrals elements include the following (use of which may vary based on site conditions):

- Bicycle racks
- Buffers and barriers
    - Parking wheel stops
    - Delineators (safe-hit posts)
    - Striping (6" solid white corral perimeter/Bike boulevard stencils)
    - Red curb (external to corral perimeter)

Racks, wheel stops, and delineators all feature white reflective tape. The curb adjacent to the corral shall be unpainted (or painted grey). The curb next to the corral shall be painted red.

Bicycle Racks

See the **City of Berkeley Bicycle Parking Design Guidelines & Specifications** excerpt at the end of this document for information about the types of racks approved by the City of Berkeley as well as spacing and orientation guidelines.

Buffers and barriers

The purpose of buffers and barriers is to alert drivers to the presence of the racks (visually and, as a last resort, physically) and to protect bicyclists using the racks. Treatments are deployed based on the adjoining feature (crosswalk, driveway, intersection, parking space).

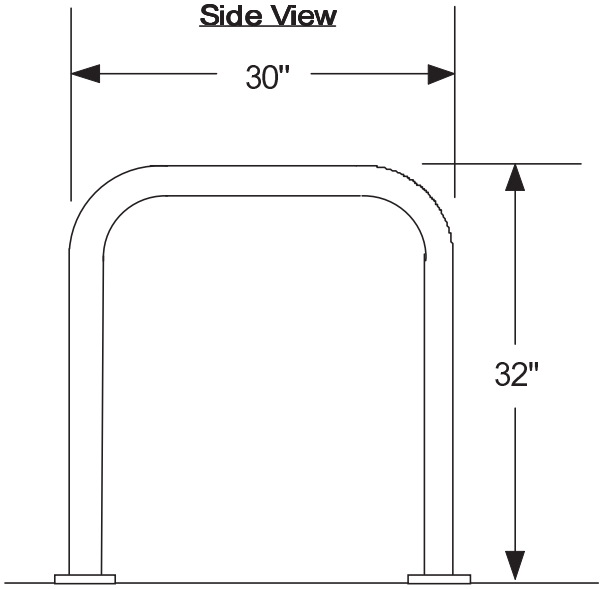
Corral buffers include pavement striping and red curb just outside the corral perimeter. A 6” white stripe is installed along the line separating the parking lane from the traffic lane. The corral edge stripe leaves a minimum 24” internal buffer (typical) to the rack element, and a minimum of 36” outside the perimeter to the adjoining feature. Two Berkeley Bike Boulevard Stencils are placed centered in openings at each end of corral. Parking Tees adjacent to the corral are installed (or refreshed).

Corral barriers include reflective wheel blocks (6’ long, 4” high, 6” wide, black recycled rubber w/ yellow reflective material) and delineators (Gorilla Post™, brown w/ white reflective material, Quick-Release 48” high).

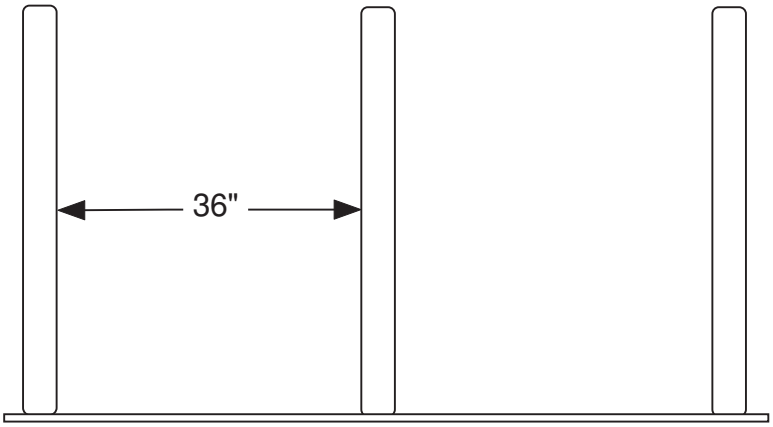
City of Berkeley Bicycle Rack Specifications
Rail Mounted Inverted U

September 2008

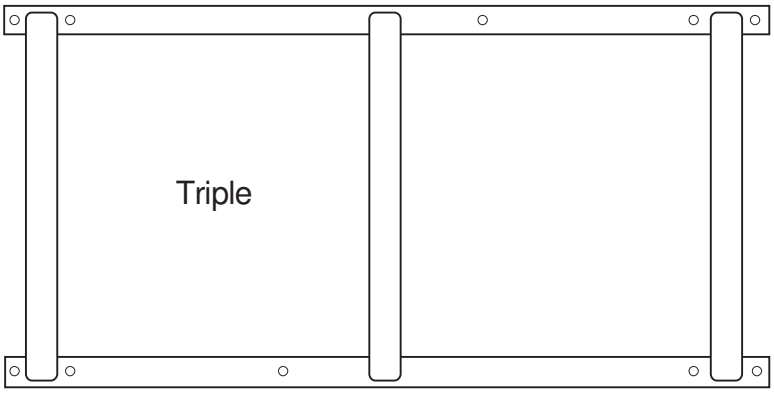
Side View

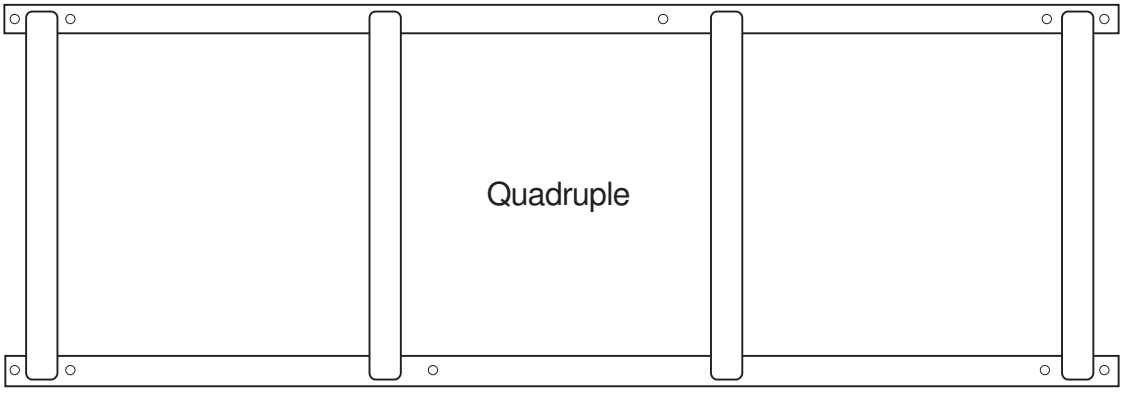


Front View



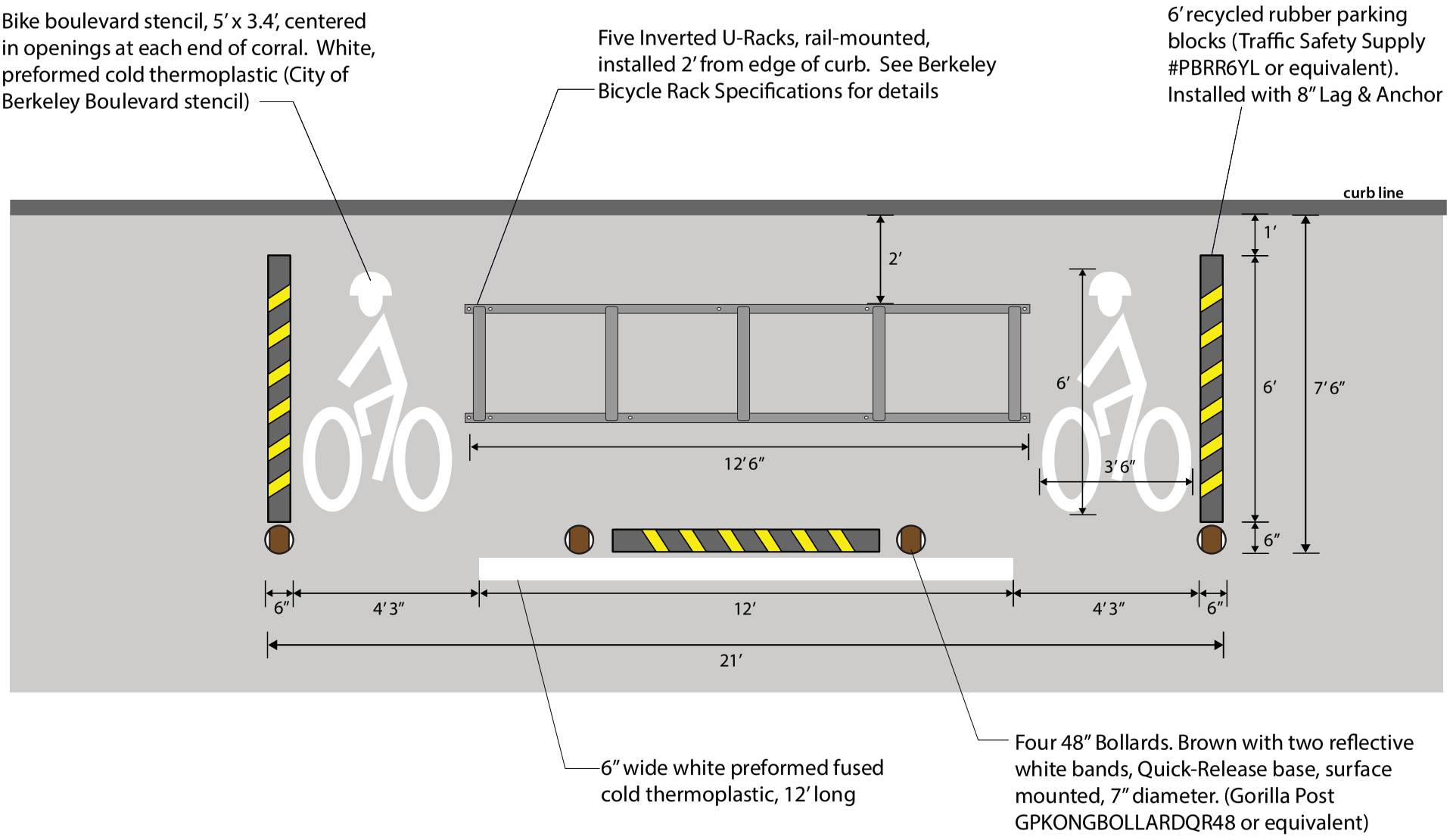
Top Views





Bicycle Corral Specifications

- 6’ recycled rubber parking blocks (Traffic Safety Supply #PBRR6YL or equivalent). Installed with 8” Lag & Anchor
- Five Inverted U-Racks, rail-mounted, installed 2’ from edge of curb. See Berkeley Bicycle Rack Specifications for details
- Bike boulevard stencil, 5’ x 3.4’, centered in openings at each end of corral. White, preformed cold thermoplastic (City of Berkeley Boulevard stencil)
- 6” wide white preformed fused cold thermoplastic, 12’ long
- Four 48” Bollards. Brown with two reflective white bands, Quick-Release base, surface mounted, 7” diameter. (Gorilla Post GPKONGBOLLARDQR48 or equivalent)


Bike boulevard stencil, 5′ x 3.4′, centered in openings at each end of corral. White, preformed cold thermoplastic (City of Berkeley Boulevard stencil)
Five Inverted U-Racks, rail-mounted, installed 2′ from edge of curb. See Berkeley Bicycle Rack Specifications for details
6′ recycled rubber parking blocks (Traffic Safety Supply #PBRR6YL or equivalent). Installed with 8″ Lag & Anchor
curb line
2′
1′
6′
7′ 6″
6′
3′ 6″
12′ 6″
6″
6″
4′ 3″
12′
4′ 3″
6″
21′
6″ wide white preformed fused cold thermoplastic, 12′ long
Four 48″ Bollards. Brown with two reflective white bands, Quick-Release base, surface mounted, 7″ diameter. (Gorilla Post GPKONGBOLLARDQR48 or equivalent)

Strength & Flexibility. The Quick-Release Magnetic Gorilla Post® Family Conqures Your Urban Jungle!

Simply put, there is no better way to deploy temporary signage. The Gorilla Post® is the solution that holds onto the system's base plate like a Gorilla!

The Gorilla Post® System Is Making Lives Simpler & Easier For The Private & Public Sector In These Ways:

- Only one person needed to deploy and remove Gorilla Post™.
- No drilling required to install system onto concrete and asphalt.
- Sub-10 pound weight reduces risk of back injury to employees.
- 6-inch diameter of magnetic base reduces risk of trip hazard compared to antiquated and awkward weighted rubber base posts.
- Small diameter allows ergonomic placement of employee's feet when lifting post from ground.
- Lightweight and small post diameter allows storage in racks off floor.
- ADA-compliant mounting plate can even be countersunk into concrete or asphalt surface.

Magnetic Pulling Power
380 psi vert. lift
275 psi 45° lift

Yes, tough as a gorilla, the post base never shifts. Post returns upright even after 15 m.p.h. impact.

The Habitat of the Gorilla Post® System Is Endless.

- Factory Floors
- Sidewalks
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- Multi-Space Parking
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- Warehouse Floors
- Loading Docks
- Concourses
- Pedestrian Pathways
- Fire Lanes
- and many more!

If you're tired of dragging around temporary posts and stanchions or dreading to ever unbolt a permanent post, Gorilla Post® is your solution.

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Available In Two Versions

Original Gorilla Post®

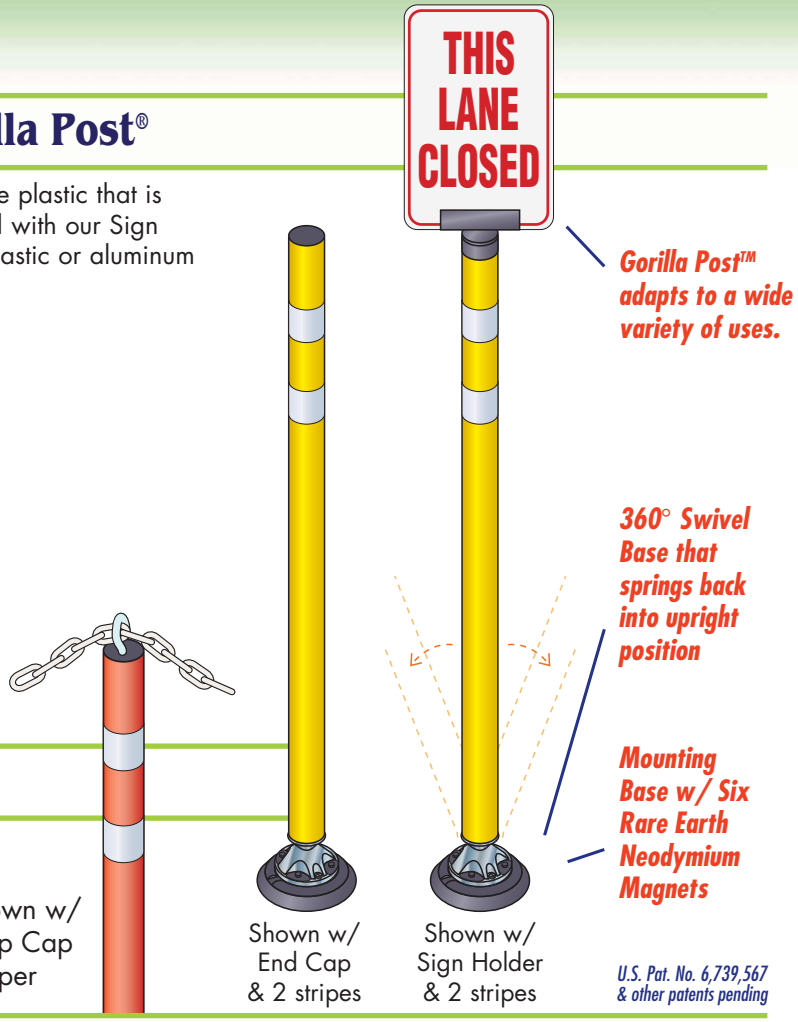
Basic but effective, posts are made of durable polyethylene plastic that is resistant to UV light, ozone and hydrocarbons. Can be used with our Sign Holder displaying 12" x 18" aluminum signs or drilled for plastic or aluminum front-mounted signs. Larger or heavier signs will not work.

STANDARD GORILLA POST:
48" Gorilla Post - 2 1/3" tube diameter with magnets

CONFIGURATIONS OF THE STANDARD GORILLA POST:
48" Gorilla Post with 2 GP*Reflect reflective horizontal tape stripes for added visibility and effectiveness
48" Gorilla Post with 2 GP*Reflect reflective horizontal tape stripes for added visibility and effectiveness and the GP*SA sign holder

Posts available in:

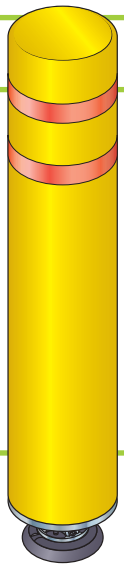
Yellow, Orange, Red, White, Grey, Black — only in quantities of 10 or more



Gorilla Post® Accessories

Reflective horizontal tape stripes for post - set of two
Metal Sign Holder for aluminum double-sided sign, 3/16" slot for sign*
max. sign size for aluminum - 12" W x 18" H
Note: Steel signs or larger signs will cause the post to become unstable and fall over.
Loop Cap Topper for plastic chain

Bollards



This 7" diameter bollard is perfect for denoting where pedestrian walkways intersect vehicular roadways. The bollard temporarily folds over upon impact by a fire truck so it is an excellent method of delineation across emergency access points to campuses and venues.

48" Gorilla Bollard - 7" tube diameter w/ 2 reflective horizontal stripes

Posts available in:

Yellow w/red bands, Orange w/white bands, Red w/white bands, White w/blue bands, Grey w/red bands, Black w/white bands, Blue w/white bands, Green w/white bands, Brown w/white bands, Beige w/white bands

SUPERHEROES OF PARKING
Since 1987

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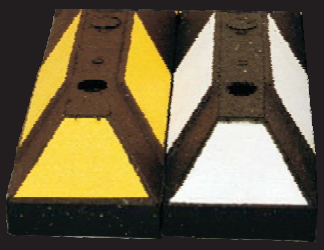
NEW SENTRY
RUBBER PARKING BLOCKS

Our 3', 4' & 6' Reflective, Recycled Rubber Parking Blocks are flexible which makes them ideal for parking spaces that are not perfectly flat.

Rubber parking blocks out perform concrete - won't chip, crack or rot from the elements

Molded in yellow or white reflective tape make them highly visible



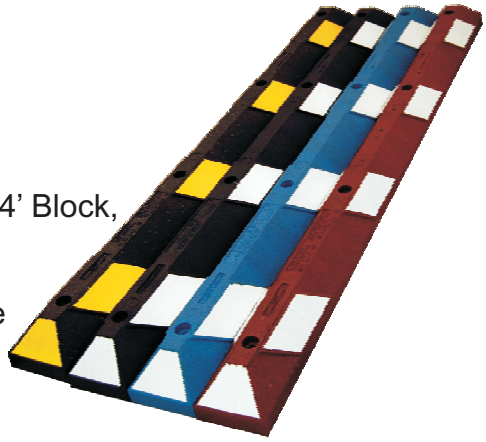
Flexible to conform to uneven surfaces

Easy to install - *No Rental Equipment Required*

All orders ship from our warehouse - Not Drop Shipped
Most orders ship same day!

Type: Recycled Rubber Parking Block

Size: Height: 4”
Length: 36”, 48” or 72”
Width: 6”
Weight: 20 lbs - 3’ Block, 26 lbs - 4’ Block,
40 lbs - 6’ Block



Standard Colors: Yellow, White & Blue

Material: Recycled Rubber

Warranty: 3 yrs on block / 1 yr on reflective tape *

Made from 100% Post Consumer Recycled Rubber (LEED qualified)

Each of our 6' rubber parking blocks saves 3.4 tires from going into landfills!

Recessed Holes for Mounting Hardware

Mounting Hardware

12" or 18” Galvanized Steel Spikes
gravel or *asphalt*

Lag Bolts & Anchors
concrete or *older asphalt at least 3" thick*

Red Head LDT Fasteners
concrete only

* Warrantied against breakage from normal ‘wear and tear’.

TrafficSafetyStore
PO Box 1449, West Chester, PA 19380
PHONE 800-429-9030
FAX 610-701-9369
www.TrafficSafetyStore.com

BIKEHUB
EASIER BICYCLE COMMUTING

BART BIKE STATIONS

The safe and convenient way to park your bike while you commute. BART offers numerous locations throughout the San Francisco Bay Area. Each station offers slightly different services, including valet parking, controlled-access parking, bike rentals, bike repairs, and more.

EXPLORE BART'S BIKE STATIONS:

1. Downtown Berkeley

ADDRESS:	2023 Center St. Berkeley, CA 94704 (See Map)
CONTACT:	(510) 548-7433 (E-mail BikeHub) (888) 540-0546 (BikeLink hotline)

OPEN HOURS:	Staffed 7am – 8pm Weekdays BikeLink Secure Parking: 24 hrs
CAPACITY:	333 bikes

SERVICES AVAILABLE:

- Free Valet Parking during staffed hours
- 24Hr Controlled Access
- Rentals
- Repairs & Sales
- BikeLink Cards Sold Here

2. Fruitvale

ADDRESS:	3301 E. 12th St. Suite 141 Oakland, CA 94601 (See Map)
CONTACT:	(510) 536-2200 (E-mail BikeHub)
OPEN HOURS:	6:30am – 7:30pm Weekdays
CAPACITY:	200 Bikes

SERVICES AVAILABLE:

- Free Valet Parking
- Repairs & Sales
- Bikelink Cards Sold Here

3. Embarcadero

ADDRESS:	298 Market Street San Francisco, CA 94105 (See Map)
CONTACT:	(888) 659-2291 (E-mail BikeHub) (888) 540-0546 (BikeLink hotline)
OPEN HOURS:	21 hours, station closed ~1am-4am
CAPACITY:	96 bikes

SERVICES AVAILABLE:

- 24Hr Controlled Access
- BikeLink Cards NOT available for sale here.

4. Ashby

ADDRESS:	3100 Adeline Street Berkeley, CA 94703 (See Map)
CONTACT:	(888) 659-2291 (E-mail BikeHub) (888) 540-0546 (BikeLink hotline)
OPEN HOURS:	24 hours

CAPACITY:	128 bikes

SERVICES AVAILABLE:

- 24Hr Controlled Access
- BikeLink Cards NOT available for sale here.

5. Uptown

ADDRESS:	1775 Broadway Oakland, CA 94612 (See Map)
CONTACT:	(510) 858-7555 (E-mail BikeHub)
OPEN HOURS:	7am – 8pm Weekdays
CAPACITY:	130 bikes

SERVICES AVAILABLE:

- Free Valet Parking
- Repairs & Sales
- BikeLink Cards Sold Here

6. Civic Center

ADDRESS:	1150 Market Street

San Francisco, CA 94102 (See Map)

CONTACT: (888) 659-2291 (E-mail BikeHub)
(888) 540-0546 (BikeLink hotline)

OPEN HOURS: 21 hours, station closed ~1am-4am

CAPACITY: 89 bikes

SERVICES AVAILABLE:

- 24Hr Controlled Access
- BikeLink Cards NOT available for sale here.

7. Pleasant Hill

ADDRESS: 7011 Sunne Ln #124
Walnut Creek, CA 94597 (See Map)

CONTACT: (925) 464-5040 (E-mail BikeHub)
(888) 540-0546 (BikeLink Hotline)

OPEN HOURS: Staffed 7am – 11am Weekdays
BikeLink Secure Parking: 24 hrs

CAPACITY: 215 bikes

SERVICES AVAILABLE:

- 24Hr Controlled Access
- Repairs & Sales
- BikeLink Cards Sold Here
- Bikeep FREE secure bike parking (learn more here)

8. Bikeep 16th Mission

FREE smart bike racks provide additional security alongside your own lock and secured seat. Basic registration and Clipper card required. Register here, and learn more here.

10. Bikeep Concord

FREE smart bike racks provide additional security alongside your own lock and secured seat. Basic registration and Clipper card required. Register here, and learn more here.

11. Macarthur

ADDRESS:	555 40th St Oakland, CA 94609 (See Map)
CONTACT:	(888) 659-2291 (E-mail BikeHub) (888) 540-0546 (BikeLink hotline)
OPEN HOURS:	24 hours
CAPACITY:	208 bikes

SERVICES AVAILABLE:

- 24Hr Controlled Access
- BikeLink Cards NOT available for sale here.


RICHMOND
El Cerrito del Norte
El Cerrito Plaza
North Berkeley
Downtown Berkeley
Ashby
MaoArthur
19th St. Oakland
12th St/Oakland City Center
West Oakland
Montgomery St
Powell St
Embarcadero
16 St/Mission
24 St/Mission
Civic Center
Glen Park
Balboa Park
DALY CITY
Colma
South San Francisco
San Bruno
San Francisco International Airport (SFO)
MILLBRAE
NORTH BAY
SAN FRANCISCO
PENINSULA
EAST BAY
PITTSBURG / BAY POINT
Pleasant Hill / Contra Costa Centre
N. Concord / Martinez
Concord
Walnut Creek
Lafayette
Orinda
Rockridge
Lake Merritt
Fruitvale
Coliseum/Oakland Airport (OAK)
San Leandro
Bay Fair
Oakland International Airport (OAK)
DUBLIN / PLEASANTON
Castro Valley
West Dublin/ Pleasanton
Hayward
South Hayward
Union City
FREMONT
BART BIKE STATIONS IN LARGE GREEN

BikeLink Lockers Available at Stations With this Icon

WARM SPRINGS / SOUTH FREMONT

HOW IT WORKS

The Bike Station Program offers 3 types of secure bike parking options: FREE valet bike parking, 24-hour* controlled-access parking, and secure bike racks.

Free valet parking:

Register in-person. Sign in and hand us your bike, no lock required. Mechanics are available for bike repairs, and common commute gear and products are available.

24-hour controlled-access parking:

1. Purchase a BikeLink card online or at any staffed Bike Station. Then register at bikelink.org. You can now use all BikeLink facilities found throughout California.
2. Your $20 Bike Link card is pre-loaded with $20 parking value. A one time ID verification is required to use the controlled-access bike stations. Verify for free in advance or immediately for $5 at a BikeLink kiosk.

3. Always lock your bicycle. These are unattended, shared use facilities.

Free smart bike racks:

Bikeep smart racks add additional security alongside your own lock and secured seat. Get more info about the program here, or click here to register.

VALET PARKING

Valet Parking

Valet bike parking is free during the day. After a quick one-time registration, follow the steps below to use valet service:

- Remove necessary items from bicycle and place bicycle in rack at front counter.
- Take a claim ticket, tear in half. Attach the larger half to to your bicycle, the smaller is your claim check: keep it safe!
- Sign into parking form. Include your full name, a brief description of the bicycle, and the last four numbers on your ticket.
- Always keep an eye on your bicycle until a staff member acknowledges you or has secured your bike behind the counter.

Rules

- For security, we do not allow overnight parking (exceptions may be made for reverse commuters, please inquire). A $5 overnight fee will be assessed each night, and bicycles left over one week may be donated or given to police.

- We are not responsible for any articles attached on the bike and bikes left overnight.
- Only you and those you designate on your Registration Form can retrieve your bike.

It is easier to park your bike when: unused bags/baskets are closed and folded, helmets are buckled to the top frame of your bike, and loose items are secured.

Our space is optimized for traditional-sized bicycles. We may accommodate cargo bicycles when possible. We do not park scooters, recumbents, or other bikes that cannot safely fit in our racks. Gas motors are never permitted in the Station.

Available at: Downtown Berkeley, Fruitvale & Uptown

CONTROLLED ACCESS

Controlled Access Parking

Our Controlled Access Bike Stations are available 21-24 hours a day (see below). Parking costs just 5¢/hr from 8am – 8pm weekdays, and 3¢/hr all other times.

The Basics

Close the door behind you every time you enter or exit. DO NOT allow anyone else in or out. Each user must check-in and check-out with their own card.

Once inside, you have 10 minutes to remain in the station. Beyond this, an alarm will sound and we will be alerted of potential security breaches.

Always lock your bike with a stout u-lock. This is an unattended, shared-use facility.

Park for up to 10 days at a time. Overtime Rates apply. Bikes left longer may be considered abandoned.

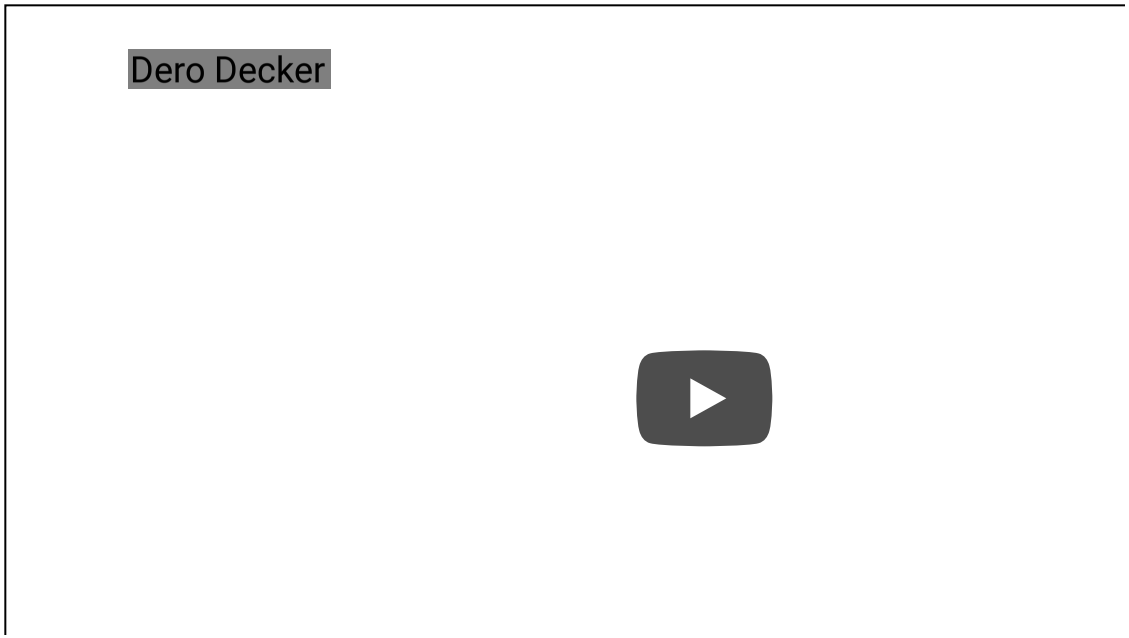
Your bicycle must always be identified with your Bike Link ID Card Number. Use the sticker provided with your Bike Link card or a temporary hang tag provided in the station.

A Few Details

- **Access hours:** Ashby, Berkeley, and Pleasant Hill controlled-access parking are open 24/7. Embarcadero & Civic Center Bike Stations are inaccessible when the BART Station closes (approximately 1am – 4am).
- **Add value to card:** Call (888) 540-0546, or go to BikeLink.org
- **Lost or missing card:** Call BikeLink at (888) 540-0546 immediately to deactivate the card. If you lose your card the value is also lost. You will have to purchase a new card.
- Abandoned/unauthorized bikes may be immobilized or impounded. Bike owners may be assessed a $55 unlock fee.

Available at: Downtown Berkeley, Macarthur, Pleasant Hill, Embarcadero, Ashby & Civic Center

Bike Link has a 24-hour customer service line for all access issues. (888) 540-0546



How to Use the Dero Ultra Space Saver

BIKEEP SECURE BIKE RACKS

Bikeep Smart Bike Racks

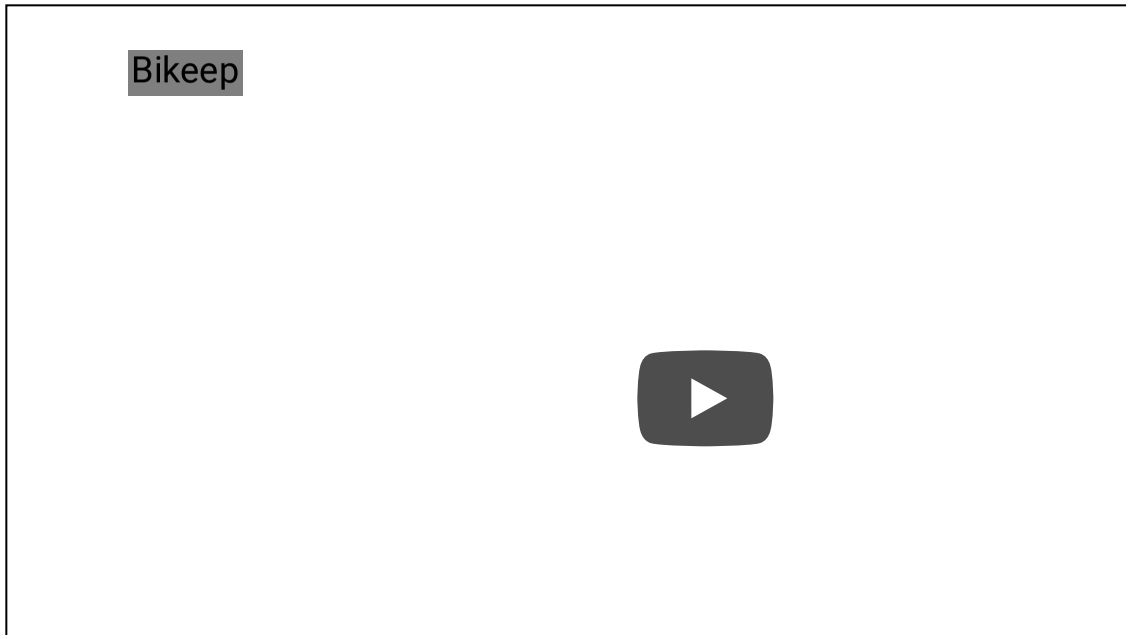
BikeHub has partnered with Bikeep to provide secure and free bike parking at your local transit station. Registration is quick and easy.

The Basics

Secure access racks are first-come-first served.
Register your Clipper card to access the racks.
Always use a secondary lock to secure quick-release wheels and seats.
Park for up to 24 hours at a time. Bikes left longer may be considered abandoned.

Click here for more details and a quick introductory video.

Available at: 16th St Mission, Pleasant Hill & Concord.



BIKE RENTALS

Bike rentals

All of our rental bikes are equipped with the gear you need. Each bike comes with: helmet, lights, u-lock, a bag, and maps upon request.

Cost: $35 per day, $95 per week, $200 per month

Available at: Downtown Berkeley Contact the Berkeley Shop with questions.

REPAIRS

Repairs

Your bike is your set of wheels, and we're here to keep you riding.

Simply tell our staff your problems and we'll either perform an inspection on the spot or call you with an estimate. We try to conduct most repairs on the same day, while your bike is parked, but can schedule an appointment for another time if necessary.

Available at: Downtown Berkeley, Pleasant Hill, Fruitvale & Uptown

FAQ

FAQ

How much will all this cost me?

Valet stations are always free during the day. Our 24-hour controlled-access stations cost only 5¢/hr weekdays 8am – 8pm and 3¢/hr all other times. If you parked five days a week, 50 weeks a year, from 9am – 5pm, you'll pay about $100 all year.

Can I park an [e-bike/scooter/tandem/cargo-bike/etc...]?

Staffed BikeHub facilities allow bicycles & electric-assist bikes that can be safely stored in a single bicycle parking rack. On a case-by-case basis, staff **may** accommodate other human powered or electric-assist vehicles such as skateboards, scooters. Full-electric or Gas-powered vehicles are **never** permitted.

Accessories may be stored only if they are securely attached to any permitted vehicle.

Is it safe?

We believe the Bike Station is the best publicly available bicycle parking option. That said, we are not responsible for any articles attached to your bicycle. We are not responsible for **any** items left overnight.

Why do you charge by the hour in your controlled-access facilities?

To accommodate as many users as possible, and discourage long-term storage of bikes. Our model accommodates as many as 5 users for each parking space, maximizing usage while charging users less.

How do I verify my BikeLink account?

To keep the facility safe, each patron is required to validate their identity. Verify for free in advance (may take up to 4 business hours to process) or immediately for $5 at a BikeLink kiosk. For more information, contact Bikelink via email or at 888-540-0546.

Why do you discourage overnight parking at valet stations?

The purpose of the Bike Station is to provide short-term secure bike parking. Long-term storage decreases the number of spaces available for use. Bikes parked overnight also increase the risk of theft.

Where can I find a list of all BART rules for cyclists?

A complete list is available online, click here.

Who pays for the bike stations?

BART allocates funds from various transit authorities (such as MTC), federal funds to encourage transit (Safe Routes to Transit), and clean air agencies (BAAQM, CalTrans). BART also coordinates partnerships with cities to support the program. As the operator, our job is to reduce funding needs each year through sales and repairs.

PHOTO GALLERIES

Downtown Berkeley







Ashby





Civic Center





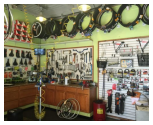
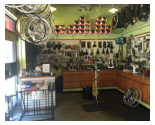


Embarcadero

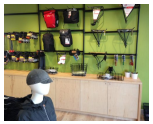




Fruitvale

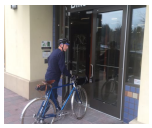




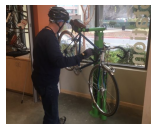

Uptown




Pleasant Hill


Hayward




Click here to add your own text

PUBLIC WORKS

Department of Public Works

New Center Street Parking Garage

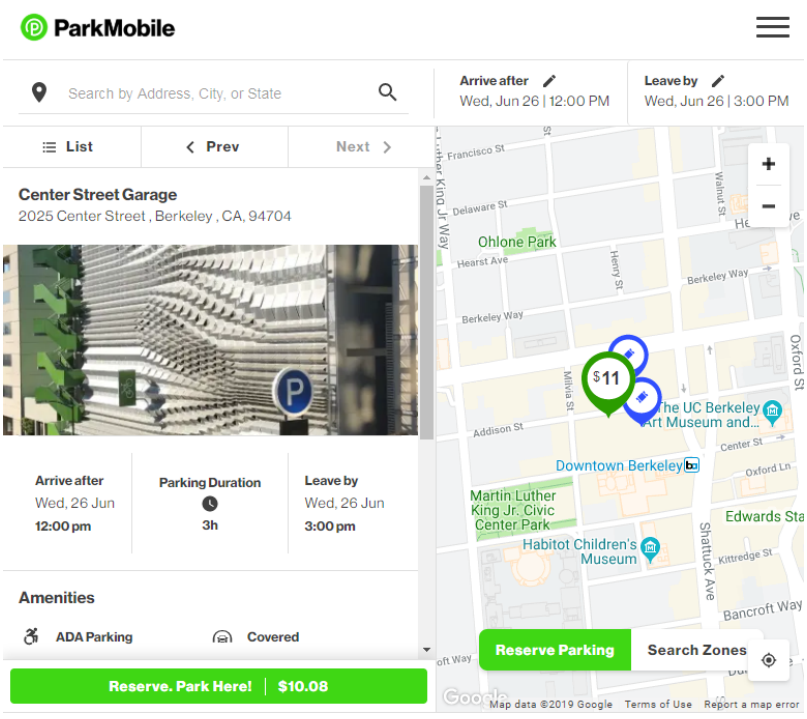
The City of Berkeley's new Center Street Parking Garage, located in Downtown Berkeley between Milvia Street and Shattuck Avenue, opened November 2, 2018.

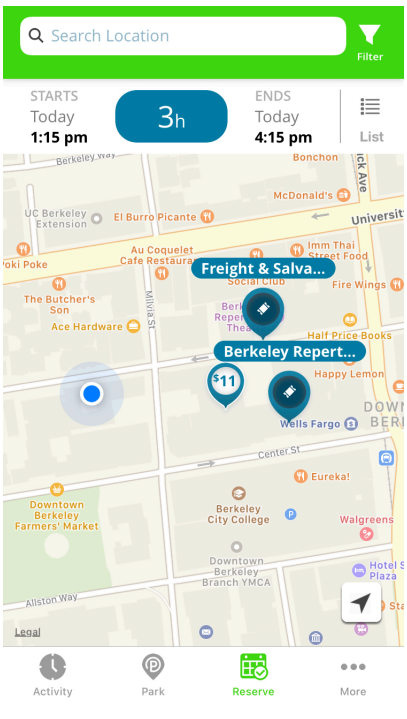
****NEW!** Make parking reservations at the Center Street Garage using Parkmobile!**

Using the Parkmobile website, you are now able to reserve and pay for hourly and event parking at the Center Street Garage before you go, so there's a space reserved for you when you arrive. Parkmobile currently provides pay-by-phone services at all of the City's on-street parking meters.

To reserve parking using Parkmobile:

1. Visit the Parkmobile website at https://parkmobile.io and click on the "Reserve Parking" link at the top right of the page. In the app, go to the "Reserve" tab at the bottom of the screen.
2. Search for "Berkeley, California," and indicate the desired beginning and ending times of your reservation at the top of the page.
3. Click the "Reserve" button for the Center Street Garage in the left hand panel.
4. Log in to your Parkmobile account (to create an account, click on the link to Sign Up).
5. After your purchase is complete, you will be able to view or print your parking pass. The pass includes a QR code, so you can use the pass on your phone to gain entry to the Garage.
6. Once you arrive at the Garage, simply scan your parking pass at the entrance, and then park your car!





The Center Street Garage is located in the heart of the City's Downtown Arts District and close to a variety of restaurants, retail and office uses, educational institutions, and mixed-use commercial and residential buildings. These include, along Addison Street, the Berkeley Repertory Theatre, Aurora Theatre, California Jazz Conservatory, and the Freight & Salvage Coffee House; Berkeley City College on Center Street; and within a few blocks, the Berkeley YMCA, Mangalam Centers, Hotel Shattuck Plaza, Berkeley Public Library, an array of restaurants, shops and banks, numerous office buildings, and Berkeley City Hall/Civic Center and Martin Luther King, Jr. Park.

The new garage includes eight levels of public parking and numerous public amenities. The Garage has a total of 720 parking spaces, including 18 accessible parking spaces on the second floor; the new garage operations "hub" (including offices, a break room, restrooms, and supply room); retail spaces and an art gallery; secure self-park and valet bicycle parking for up to 350 bicycles; a phased implementation of up to 20 electric vehicle charging stations; and two tire inflation stations. The garage is designed as a "double helix" parking ramp structure with perpendicular parking spaces on inclined ramps. Vehicles may access the garage on both Center and Addison Streets, at flexible entrances that allow for multiple entry and exit lanes as determined by demand.

The former garage, located on this same site, was built in the late 1950s and seismically unsound. The 60-year-old facility had 440 parking spaces on five levels, vehicle access from Addison and Center Streets, about 1,600 square feet of ground floor retail facing Center Street, office space for garage operations, and a public restroom.

Construction Gallery

Week 1: July 25-29, 2016

Overhang removal

Second floor office demolition

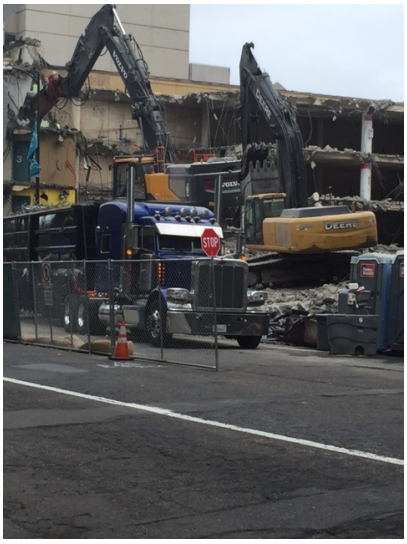
Dismantling of "parking" sign

Week 2: August 1-5, 2016

Demolition of Levels 1-3

Further demolition of all levels

Week 3: August 8-12, 2016



Week 92: April 23-27, 2018

Center street view

Addison street view

Department of Public Works, 2180 Milvia Street, Berkeley, CA 94704
Questions or comments? Email: publicworks@cityofberkeley.info Phone: (510) 981-6300
(510) 981-CITY/2489 or 311 from any landline in Berkeley
TTY: (510) 981-6903

Appendix C: Boulder, Colorado

Sustainable Transportation Policies, City of Boulder

City of Boulder Transportation Master Plan (2014) Policies			
Category	**Mode**	**Policy / Program**	**Policy / Program Text**
Encouragement	Walking	Boulder Walks	The city introduced the Boulder Walks program to celebrate walking, highlight historic and cultural resources, and emphasize the health and community benefits of walking. Walkabouts bring together community members to promote walking as a great option for transportation. Walking route maps are developed to encourage visitors and locals to explore Boulder's unique neighborhoods.
	Biking	Bike Month	Continue expanding the city-wide bike sharing system that the City of Boulder and the nonprofit Boulder B-cycle launched in 2011, serving residents, employees and visitors.
		Bike to Work Days	
		Bike to School Day	
			Promote and support community-based social rides and events to broaden the appeal of cycling as a fun, viable transportation option for people of all ages and abilities. The Bike 2.0 focus is to encourage more women, older adults, and families with children to bicycle more often.
	Transit	Real-time Transit-Info	Provide access to real-time transit information to reduce time spent waiting time for the bus and to make transit more convenient and affordable.
			The city will take a leadership role, working with partners and RTD to provide real-time information displays at transit centers and high-ridership stops and system-wide on phones and mobile device applications, by making bus location data available to application developers.
		Expand transit-bicycle integration	Expand transit-bicycle Integration to enable bikes to serve more first- and last-mile connections on either or both ends of a transit trip.
			The city should partner with Boulder County to expand bike-transit commuting options, including secure bike parking facilities and increased onboard bike capacity.
	Ridesharing and Vanpooling		The city promotes regional and school district car pool and vanpool programs.
Education	Pedestrians	Etiquette Campaign	To raise awareness of multi-use path rights and responsibilities.
			The city works with community partners to educate users on their rights and responsibilities when traveling throughout Boulder. Safety education materials on the rules of the road and paths, including maps of where cyclists cannot ride, are available to the community and distributed during CU-Boulder orientation. Safe Routes to School programs are offered in most elementary and middle schools. Several communitybased organizations and clubs offer children and youth opportunities to learn cycling skills outside of school. More recently, the Heads Up Boulder campaign educates users on crosswalk safety and rules of the road. Additional efforts are proposed to address conflicts in the use of public roadways and pathways.
			Additional crosswalk safety education programs are planned for middle school students and the city is working collaboratively with CU to improve pedestrian safety on campus and throughout the city.
	Bike	Ordinance-Revisions	To clarify the rights and responsibilities of right-turning motorists on roadways with on-street bicycle lanes.
		Rights and Responsibilities	Outreach through agency partners and local bike shops will help cyclists understand their rights and responsibilities.
		Bicycle Education Coalition	The city will host a Bicycle Education Coalition to establish a consortium of agency partners and local organizations to guide and identify future priority initiatives. Initial initiatives include hosting bicycle commuting 101 and "train the trainer" cycling instructor courses.
		Bicycle Ambassador Program	N/A
		Lighten Up Boulder Bike Light Campaign	The city also supports a Bicycle Ambassador program and the fall Lighten Up Boulder bike light campaign to highlight the danger of riding at night without proper lighting.
	Transit	Maps	The city and Boulder County currently publish a Boulder County transit map. In addition, the city publishes route-specific information and maps for the CTN routes on its web site and offers education sessions for employees and others by supporting US 36 Commuting Solutions and Boulder Transportation Connections.
		General Public Info Campaign	General public information campaigns should highlight the community and individual benefits of transit, including environmental, health, and economic.
		Individualized marketing programs for targeted groups	Individualized marketing programs for targeted groups such as commuters, students, and older adults have been successful at both the neighborhood and business scale. Boulder should focus resources in this area on targeting new residents and employees, including new non-resident employees, and marketing new services such as US 36 Bus Rapid Transit.
Pedestrian Modal Element	Pedestrian Policies		Develop a high-quality pedestrian environment as the foundation for the desired multimodal transportation system
			Uphold the standard for pedestrian mobility and accessibility so that a wheelchair user can move safely and conveniently through the transportation system
			Support a high-quality pedestrian environment including the ability to travel safely and conveniently along the street and to have reasonable crossing opportunities; to travel through a comfortable and interesting environment provided by high-quality urban design; and to have appropriate pedestrian amenities such as benches, shade, and water fountains
			Identify alternative means of meeting defined pedestrian needs where applicable—if the need can be met safely within the traveled way of a rural residential street or access lane, then sidewalks may not need to be developed
	Walk Audits (Living Laboratory and Boulder Walks)		Community Walkbouts and Walk Audits are used to identify design elements supporting a walk-friendly community. In particular, the relationship between the transportation network, the land use it serves, and the streetscape interface of the two are factors that influence walk-friendliness.
	Neighborhood Access Tool		The Neighborhood Access Tool characterizes the people's ability to walk to locations and businesses to meet daily needs. It is a new tool that illustrates aspects of the 15-minute neighborhood by displaying the area that can reach a given attractor in a 15-minute walk (walk shed). These walk sheds are aggregated to display the number of attractors available from a given location. The distance that one can walk in a given time depends on the quality of available pedestrian facilities.
			Information from the Walk Audits can be incorporated into the Neighborhood Access Tool.
Bicycle Modal Element	Living Lab/Innovations		The Living Labs are temporary installations that offer the community the opportunity to test new bike treatments and determine if they are appropriate for Boulder. The aim is to enhance the on-street bike system to improve comfort and confidence for people who want to bike but don't feel comfortable or confident sharing the roadway with motor vehicle traffic.
	Bicycle Policies		Complete a grid-based system of primary and secondary bicycle corridors to provide bicycle access to all major destinations and all parts of the community
			Coordinate with Boulder County, CU, the Boulder Urban Renewal Authority, neighborhood plans, the city Parks and Recreation Department, the Open Space and Mountain Parks Department, and other government entities and plans to ensure that all city and county projects connect with and/or help to complete the corridor network
			Work with property owners, developers, the Boulder Valley School District, the city Parks and Recreation Department, and CU to ensure that commercial, public, and mixed-use and multi-unit residential sites provide direct, safe, and convenient internal bicycle circulation and parking oriented along the line of sight from external connections to areas near building entrances and other on-site destinations
			Combine education and enforcement efforts to help instill safe and courteous use of the shared public roadway, with a focus on better educating students on how to properly share the road with bicyclists, pedestrians, and transit users
	Low-Stress Bicycle Network		The low-stress analysis evaluates the stress level of the city's existing bicycle network to identify barriers and opportunities for system enhancements.
			The city will develop Bicycle Facility Installation Guidelines to create a "2.0 bicycle network" of a complete and connected low-stress network.

	Bicycle Facility Installation Guidelines	The Guidelines will be informed by the evaluation of the installed treatments and be similar to the city's Pedestrian Crossing Treatment Installation Guidelines. The 2.0 bicycle network of planned improvements will attract a broader population of people as confident and comfortable cyclists.
Transit Modal Element	**Services**	Maintain and improve the integrity of the Community Transit Network (CTN) system, including frequent and direct service, discrete branding, etc.
		Incrementally improve and expand the high-frequency CTN throughout Boulder County as funding allows.
		Prioritize city operating subsidies to meet or surpass Boulder's minimum service level standards for the CTN (10-minute peak and 15-minute off-peak headways, as defined in the TMP Transit Modal Element), particularly when routes serving the CTN exceed RTD's maximum passenger loading standards.
		Manage arterial transit streets to provide priority to transit vehicles carrying high average passenger loads while considering cross-street pedestrian and traffic demand
		Work with RTD to develop performance agreements that ensure service hours gained through city-funded transit investments will be reinvested in routes that serve Boulder, particularly the CTN
		Enhance connections between the following major developing activity centers: CU Main and East Campuses and the Boulder Junction and Table Mesa transit centers
		Increase funding to Via over time to enhance service to older adults and persons with disabilities, including support for programs that provide efficiencies and service enhancements to the paratransit system
	Capital	Design and implement bus priority (speed and reliability) improvements for CTN routes
		Collaborate with RTD, Via, and other partners to transition the transit fleet to "clean," low-carbon emissions fuel/energy sources through vehicle acquisition for new services and fleet replacement
		Design major transit centers and mobility hubs to provide high-quality bus and multimodal connections
		Provide funding for transit stop improvements, prioritized based on a tiered facility investment hierarchy linked to the level of current and/or projected ridership
	Policies and Programs	Work with partners to make real-time transit information available at major transit centers/facilities and accessible over the web and on mobile devices by working with RTD and other partners
		Explore and pursue expansion of the Eco Pass transit pass program and other TDM programs. See TDM Action Plan.
		Promote urban design and development that supports walking, cycling, and safe access to transit. Encourage affordable housing and transit demand generating land uses along existing or planned CTN and BRT corridors
		Expand and support first- and last-mile programs with local and regional partners.
		Support development of technology and standards that enable current and evolving shared mobility applications in Boulder. See TDM Action Plan.
		Work with local and regional partners to explore the most effective and efficient transit service delivery and governance options for implementing the Renewed Vision for Transit.
Complete Streets Action Plan	**N/A**	Focus on roadway enhancement and street corridor projects that address safety issues while supporting the community's desires for public placemaking, right of way re-purposing, innovations, and creating streets that are amenities for the community
		Continue to implement efficiency improvements to the overall system through real-time traffic information, traffic flow improvements at key intersections, corridor timing plans, and other efforts
		Continue to prioritize, design, and construct complete streets for all modes
		Continue to pursue lower-cost pedestrian and bicycle facility enhancements (such as pedestrian crossings, access ramps, bike lanes, and missing links) through the dedicated pedestrian and bike facilities funds
		Continue the Living Lab program and increase the emphasis on all five E's to increase use of the system by people of all ages and stages of life
		Expand the living laboratory philosophy to walking, transit, and TDM to increase use and effectiveness of these systems
		Coordinate transportation planning and investments with anticipated changes in land use through corridor studies to maximize their effectiveness and support community desires for high quality design and placemaking
		Maintain and expand the existing CTN transit service within the community following the Renewed Vision for Transit as funding allows
		Work with regional partners to implement high quality BRT service to surrounding communities on US 36 and the identified NAMS regional corridors
		Pursue implementation of providing real-time transit information at major bus stops and directly to transit passengers
		Explore and develop transit service delivery options with local and regional agency partners to implement Boulder's Renewed Vision for Transit
		Implement mobility hubs and other solutions to expand options for addressing the first- and last-mile portion of transit trips
		Enhance transportation data collection and system status reporting as new data collection and distribution technology becomes available, working toward the vision of a complete mobility planning and payment system being available on any personal electronic device
Sustainability Initiatives	**N/A**	Continue cross-departmental coordination and collaboration on integrated sustainability planning efforts
		Maintain the GhG inventory system developed through the Climate Commitment work and include GhG reduction strategies in transportation planning and construction activities
		Support First and Final Mile bicycle and pedestrian connections to regional transit to encourage and enable multimodal trips
		Prepare a Report on Progress document every two years and maintain an up-todate web-based dashboard

Boulder Valley Comprehensive Plan (2017) Policies

Category	Policy #	Policy Title	Policy Text
Complete Transportation System	**6.01**	**All-Mode Transportation System & Complete Streets**	The Boulder Valley will be served by an integrated all-mode transportation system, developed cooperatively by the city and county.
			The city's transportation system will be based on complete streets in the urban area, including completed networks for each mode, making safe and convenient connections between modes, providing seamless connections between the city and county systems and promoting access and placemaking for the adjacent land uses and activities.
			Improvements to urban travel corridors will recognize pedestrian travel as the primary mode of transportation and preserve or improve the safety and efficiency of all modes of transportation.
	6.02	**Renewed Vision for Transit**	The city and county will integrate transit investments and improvements to address service, capital infrastructure, policies, programs and implementation. These will expand the Community Transit Network (CTN) and improve regional transit service and connections outside the city, such as bus rapid transit (BRT) along state highways and regional bus services.
	6.04	**Transportation System Optimization**	The transportation system is used by all modes, and maintaining its efficient and safe operation benefits all users. The city and county will monitor the performance of all modes as a basis for informed and systematic trade-offs supporting mobility, safety, GHG reduction and other related goals.
	6.06	**Accessibility and Mobility for All**	The city and county will continue development of a complete all-mode transportation system accommodating all users, including people with mobility impairments, youth, older adults, non-English speakers and low-income persons.
			This will include increased support for mobility services for older adults and people with disabilities, reflecting the expected increases in these populations.
			Efforts should focus on giving people options to live well without a car and may include prioritizing affordable public transportation and transit passes, new technologies such as electric bikes, mobility services and prioritizing connections between multimodal transportation and affordable housing to facilitate affordable living.

	6.07	Transportation Safety	The city and county recognize safety for people of all ages using any mode within the transportation system (i.e., walking, bicycling, transit riding and driving) as a fundamental goal.
			The city's policy "Toward Vision Zero" aims to reduce serious injury and fatal collisions involving people using all modes of travel, focusing on crash trends and mitigation strategies identified in the Safe Streets Boulder Report and on-going local, regional and statewide safety assessments.
Regional Travel	6.08	Regional Travel Coordination	The city and county will work to develop regional consensus for multimodal improvements to regional corridors through working with the Colorado Department of Transportation, the Regional Transportation District (RTD), US 36 Mayors and Commissioners Coalition and other providers to develop highquality, high-frequency regional transportation options, including improvements identified in the Northwest Area Mobility Study (NAMS), FasTracks arterial bus rapid transit (BRT) service and commuter bikeways between communities.
			The city and county will continue development of first- and last-mile connections to local systems and longer-term transit planning.
Funding & Investment	6.11	Investment Priorities	To protect previous investments and ensure efficient use of existing travel corridors, the city and county will prioritize investments for improvements to safety and maintenance for all modes of the existing transportation system.
			The city and county will give second priority to capacity additions for non-automotive modes and efficiency improvements for existing road facilities that increase person carrying capacity without adding general purpose lanes.
			The city and county will manage and price any additional significant regional single-occupancy vehicle road capacity to provide reliable and rapid travel times for transit, high-occupancy vehicle lanes and other carsharing options.
Integration of Land Use & Transportation with Sustainability Initiatives	6.13	Concurrent Land Use & Transportation Planning	Overall citywide transportation and land use planning will continue to be coordinated. Future major changes to the Land Use Map and policies of this plan and the TMP should, to the extent practicable, be coordinated, modeled and evaluated concurrently.
	6.14	Integrated Planning for Regional Centers & Corridors	Land use in and surrounding the three intermodal regional centers (i.e., Downtown Boulder, the University of Colorado and the Boulder Valley Regional Center, including at Boulder Junction) will support their function as anchors to regional transit connections and Mobility Hubs for connecting a variety of local travel options to local and regional transit services.
			The land along multimodal corridors, the major transportation facilities that provide intra-city access and connect to the regional transportation system, will be designated as multimodal transportation zones where transit service is provided on that corridor.
			In and along these corridors and centers, the city will plan for a highly connected and continuous transportation system for all modes, identify locations for mixeduse and higher-density development integrated with transportation functions, emphasize highquality urban design and pedestrian experience, develop parking maximums and encourage parking reductions.
	6.15	Complete Missing Links	The city's and county's goal is to complete missing links in trails, paths and sidewalks, including connections to all transit stops. The city and county will work to complete missing links throughout the transportation grid through the use of connection plans and at the time of parcel redevelopment, as appropriate.
			Of particular interest are missing bicycle facilities and sidewalk links that connect to transit stops, recognizing that for some members of the community and workforce, transit is the primary travel option.
	6.16	Transportation Facilities in Neighborhoods	The city will strive to protect and improve the quality of life within city neighborhoods while developing a balanced multimodal transportation system.
			The city will prioritize improvements to access by all modes and safety within neighborhoods by controlling vehicle speeds and providing multimodal connections over vehicle mobility.
			The city and county will design and construct new transportation facilities to minimize noise levels to the extent practicable.
			Neighborhood needs and goals will be balanced against the community necessity or benefit of a transportation improvement.
	6.17	Transportation Infrastructure to Support Walkable 15-Minute Neighborhoods	The city will continue to build improvements to transportation facilities in neighborhoods that create a variety of neighborhood supporting activities and infrastructure within approximately a one-quarter-mile walk radius where residents and employees can fulfill more of their daily needs through safe, healthy and convenient walking and biking.
	6.18	Neighborhood Streets & Alleys Connectivity	The city recognizes neighborhood streets and alleys as part of the public realm and will plan a well-connected and fine-grained pattern to facilitate public access, promote safe and convenient travel for all, disperse and distribute vehicle traffic and maintain character and community cohesion.
	6.19	Mobility Hubs	As guided by the TMP, the city will establish Mobility Hubs that provide seamless integration between transit and pedestrian and bicycle facilities, car/ridesharing and a context appropriate parking supply for people of all physical abilities.
			The city will encourage Mobility Hubs to emphasize excellent pedestrian infrastructure within a quarter- to half-mile walk shed, connections to the bicycle network and high-quality urban design of structures and public spaces.
Other Transportation Policies	6.20	Improving Air Quality & reducing Greenhouse Gas Emissions	Both the city and county are committed to reductions in GHG emissions, with the city committing to an 80 percent reduction from 2005 levels by 2050. The city and county will design the transportation system to minimize air pollution and reduce GHG emissions by promoting the use of active transportation (e.g., walking and bicycling) and low-emission transportation modes and infrastructure to support them, reducing auto traffic, encouraging the use of fuel-efficient and clean-fueled vehicles that demonstrate air pollution reductions and maintaining acceptable traffic flow.
Design Quality	2.41	Enhanced Design for All Projects	Transportation connections. Projects should provide a complete network of vehicular, bicycle and pedestrian connections both internal to the project and connecting to adjacent properties, streets and paths, including dedication of public rights-of-way and easements where required.
	2.25	Improve Mobility Grid	The walkability, bikeability and transit access should be improved in parts of the city that need better connectivity and mobility, for example, in East Boulder. This should be achieved by coordinating and integrating land use and transportation planning and will occur through both public investment and private development.
Climaye Action & Greenhouse Gas Emissions	4.01	Climate Action: Reduce Greenhouse Gas Emissions	To mitigate climate change, the city and county will continue to take action to reduce the burning of fossil fuels for energy and encourage such change throughout the Boulder Valley.
			The city and county will identify and implement innovative as well as cost-effective actions to dramatically reduce the entire community's (e.g., government, private business, individual residents) and visitor's contributions to total global GHG emissions and power a vibrant future.
			The city's goals are to reduce its energy-related emissions 80 percent or more below 2005 levels by 2050 through a rapid transition to a renewable energy-based economy and achieve 100 percent renewable electricity by 2030.
Energy Conservation & Renewable Energy	4.05	Clean Mobility	To reduce GHG emissions, the city and county will support the retirement of fossil-fuel based transportation.
			The city and county will continue to develop policies, incentives and programs that reduce vehicle miles traveled, replace fossil fuel based transportation with clean energy- fueled transportation (e.g., with electric vehicles) and continue to plan a built environment and mix of land uses that reduce the need for people to drive.
Quality of Life	5.08	Funding City Services & Urban Infrastructure	The city will encourage a strong sustainable economy to generate revenue to fund quality city services and recognizes that urban infrastructure, facilities, services and amenities are important to the quality of life of residents, employees and visitors to the community.
			The city will continue to plan for and invest in urban amenities and infrastructure (e.g., bike paths, parks, shared and managed parking, public spaces, quality gathering places, cultural destinations and public art) as well as community services (e.g., open space and mountain parks, high speed internet, fire-rescue, public safety and senior services).

Travel Demand Management Policies, City of Boulder

City of Boulder Transportation Master Plan (2014) Policies			
Category	**Mode**	**Policy / Program**	**Policy / Program Text**
Incentives	**Transit**	**Eco Pass**	The most effective incentive developed by the city and RTD is the Eco Pass—an annual, universal transit pass.
			Deeply discounted when an employer buys it for all employees or group of neighbors join together
			City rebates for first-time commercial participants
			On-going subsidy for neighborhood programs
			Removes out-of-pocket costs of using transit and hassle of paying cash fares
			A sensitivity analysis conducted as part of the transit planning effort shows that the Eco Pass is one of the most cost effective tools for increasing transit ridership; Eco Pass holders also walk and bicycle more.
			An expanded community-wide Eco Pass program could make discounted transit passes available to residents and/ or employees city or county-wide.
			The program is currently limited to university students, employees/residents of participating businesses or neighborhoods but there are still almost 70,000 annual transit passes in the community.
			The city will continue the current work with Boulder County and RTD to expand the Eco Pass program.
Disincentives	**Auto**	**SUMP Principles**	The city has developed the "SUMP" principles—shared, unbundled, managed, and paid parking—to minimize the amount of required parking, increase parking efficiency, and support mode shift.
			Minimizing required parking promotes high quality urban design, placemaking and the pedestrian oriented place that support community.
			Wider application of the SUMP principles will help remove an incentive to auto use and will support a wide variety of community sustainability, built form, and transportation goals.
Transit Modal Element	**Transit**	**Policies and Programs**	Explore and pursue expansion of the Eco Pass transit pass program and other TDM programs. See TDM Action Plan.
			Support development of technology and standards that enable current and evolving shared mobility applications in Boulder. See TDM Action Plan.
TDM Action Plan			Continue to work with Boulder County and RTD on the development of a Community-wide Eco Pass program and to expand the existing pass programs
			Continue to support and coordinate activities with the existing transportation management organizations, such as Boulder Transportation Connections and US 36 Commuting Solutions, and DRCOG's regional Way to GO TDM program
			Continue to support and coordinate activities with partner community organizations providing options in transportation, including Via, E-Go Car share, Boulder B-cycle, and Community Cycles
			Continue the AMPS process to align parking utilization and requirements to city sustainability goals and broaden parking management as the foundation of TDM activities
			Refine the TDM Toolkit for development review with partner organizations to produce more consistent and substantial reductions in SOV use through TDM programs appropriate to the location of the development

Boulder Valley Comprehensive Plan (2017) Policies			
Category	**Policy #**	**Policy Title**	**Policy Text**
Complete Transportation System	**6.03**	**Reduction of Single Occupancy Auto Trips**	The city and county will support and promote the greater use of alternatives to reduce vehicle miles traveled (VMT) and single-occupancy automobile travel.
			The city will continue progress toward its specific objective to reduce vehicle miles of travel (VMT) 20 percent from 1994 levels through the year 2035 within the Boulder Valley to achieve transportation and GHG reduction goals.
			The city and county will include other communities and entities (especially origin communities such as Longmont, Lafayette, Louisville and Erie) in developing and implementing integrated travel demand management (TDM) programs, new mobility services and improved local and regional transit service.
			The city will require TDM plans for applicable residential and commercial developments within the city to reduce the vehicle miles traveled and single-occupant vehicle trips generated by the development.
	6.05	**Integrated Transportation Demand Management (TDM) Programs**	The city and county will cooperate in developing comprehensive Transportation Demand Management (TDM) programs for residents and employees, which include incentives, such as developing a universal community transit pass program; promoting shared-use mobility, ridesharing, bikesharing, carsharing, vanpools and teleworking; and supporting programs for walking and biking, such as secured long-term bike parking.
			The city will employ strategies such as shared, unbundled, managed and paid parking (i.e., "Shared Unbundled, Managed, and Paid" – "SUMP" principles) to reflect the real cost of Single Occupancy Vehicle (SOV) travel.
			The city will require TDM plans for applicable residential and commercial developments.
Regional Travel	**6.09**	**Regional Transit Facilities**	The city will develop and enhance the regional transit anchors that serve the primary attractors of Downtown Boulder, the University of Colorado and Boulder Junction adjacent to the Boulder Valley Regional Center. Developing "Mobility Hubs" and first and last mile connections to these facilities is a priority to support employees commuting into and throughout Boulder and to reduce single-occupancy auto travel and congestion on regional roads.
	6.11	**Access Management & Parking**	The city considers vehicular and bicycle parking as a component of a total access system for all modes of transportation (bicycle, pedestrian, transit and vehicular). Such parking will be consistent with the desire to reduce single-occupant vehicle travel, balance the use of public spaces, consider the needs of residential and commercial areas and address neighborhood parking impacts.
			The city will accommodate parking demands in the most efficient way possible with the minimal necessary number of new spaces and promote parking reductions through a variety of tools, including parking maximums, shared parking, unbundled parking, parking districts and transportation demand management programs.

Integration of Land Use & Transportation with Sustainability Initiatives			The city will expand and manage parking districts based on SUMP principles (shared, unbundled, managed and paid) to support transportation and GHG reduction goals as well as broader sustainability goals, including economic vitality and neighborhood livability.
	6.12	**Transportation Impacts Mitigated**	Transportation or traffic impacts from a proposed development that cause unacceptable transportation or environmental impacts, or parking impacts, to surrounding areas will be mitigated.
			All development will be designed and built to be multimodal and pedestrian-oriented and include TDM strategies to reduce the vehicle miles traveled generated by the development.
			Supporting these efforts, new development will provide continuous multimodal networks through the development and connect these systems to those surrounding the development.
			The city and county will provide tools and resources to help businesses manage employee access and mobility and support public-private partnerships, such as transportation management organizations, to facilitate these efforts.
	6.16	**Transportation Facilities in Neighborhoods**	Additionally, the city will continue its neighborhood parking permit (NPP) programs to seek to balance access and parking demands of neighborhoods and adjacent traffic generators.

Parking Management Policies, City of Boulder

City of Boulder Transportation Master Plan (2014) Policies			
Category	**Mode**	**Policy / Program**	**Policy / Program Text**
TDM Action Plan	**N/A**	**N/A**	Refine the TDM Toolkit for development review with partner organizations to produce more consistent and substantial reductions in SOV use through TDM programs appropriate to the location of the development
Boulder Valley Comprehensive Plan (2017) Policies			
Category	**Policy #**	**Policy Title**	**Policy Text**
Complete Transportation System	**6.05**	**Integrated Transportation Demand Management (TDM) Programs**	The city will employ strategies such as shared, unbundled, managed and paid parking (i.e., "Shared Unbundled, Managed, and Paid" – "SUMP" principles) to reflect the real cost of Single Occupancy Vehicle (SOV) travel.
Design Quality	**2.41**	**Enhanced Design for All Projects**	Through its policies and programs, the city will encourage or require quality architecture and urban design in all development that encourages alternative modes of transportation, provides a livable environment and addresses the following elements:
			Parking - The primary focus of any site should be quality site design. Parking should play a subordinate role to site and building design and not jeopardize open space or other opportunities on the property. Parking should be integrated between or within buildings and be compact and dense.
			The placement of parking should be behind and to the sides of buildings or in structures rather than in large street-facing lots.
			Surface parking will be discouraged, and versatile parking structures that are designed with the flexibility to allow for different uses in the future will be encouraged.
Integration of Land Use & Transportation with Sustainability Initiatives	**6.11**	**Access Management & Parking**	The city considers vehicular and bicycle parking as a component of a total access system for all modes of transportation (bicycle, pedestrian, transit and vehicular). Such parking will be consistent with the desire to reduce single-occupant vehicle travel, balance the use of public spaces, consider the needs of residential and commercial areas and address neighborhood parking impacts.
			The city will accommodate parking demands in the most efficient way possible with the minimal necessary number of new spaces and promote parking reductions through a variety of tools, including parking maximums, shared parking, unbundled parking, parking districts and transportation demand management programs.
			The city will expand and manage parking districts based on SUMP principles (shared, unbundled, managed and paid) to support transportation and GHG reduction goals as well as broader sustainability goals, including economic vitality and neighborhood livability.

Appendix D: Vancouver, British Columbia

Driven by people, not profits.

What's Modo?

Carsharing starting at $4/hour. With Modo, you get all the benefits of having a car, without all the hassles of owning one (or two). Our rates include gas, **insurance (https://www.modo.coop/insurance/)**, maintenance and **parking privileges (http://modo.coop/parking-privileges/)**. Simply pick up a Modo and return it at the same location for your round trip, with two return options to choose from.

Drive what you want, when you want. Share 700 cars, SUVs, trucks, mini vans, hybrid and EVs – across the Lower Mainland, Vancouver Island, and the Okanagan. Book a year in advance or on the fly, and access live 24/7 member service.

Driven by people, not profits. Modo is your only local member-owned carshare service. Modo transforms communities by connecting people with places in a way that's affordable, convenient, inclusive and sustainable.

Our Story

A True BC Original

We started out like many other co-ops – with an innovative idea, a ton of passion and finding guidance in the seven international co-operative principles (http://bcca.coop/knowledge-centre/co-op-business-model/co-op-principles/). In 1997, we were the first carshare in BC and the second in North America, with a goal to provide our members with great service and best value – while reducing the need for private vehicle ownership. Why? To support an affordable lifestyle and reduce traffic congestion and parking problems. Simply put, to improve the livability of our communities.

More than two decades later, our social purpose remains the same. We're still about people, not profit. And the need for carsharing is even greater. In the next 20 years, we are expected to welcome another million residents to Metro Vancouver alone. If we don't change our transportation habits, this will mean another 700,000 vehicles driving on our streets.

With more than 20,000 members, businesses, developers and municipal partners, Modo's two-way carshare service continues to have impact. Every Modo removes 9-13 private cars from the roads – an asset that sits idle about 95% of the time and costs the average British Columbian $9,500 a year to own and operate. We advocate that our members walk, cycle, and take public transit whenever they can. And when one needs a vehicle, use a shared vehicle best suited to the nature of the trip. Choose from 700 cars, trucks, SUVs, passenger vans, cargo vans and more.

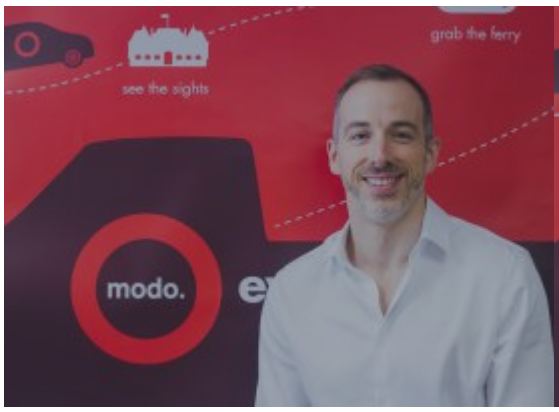
Our Social Purpose

We are proud to be a co-operative. In fact, the only carshare co-operative in the municipalities we serve. We exist to make a difference for our members and the wider community, with a unique Purpose and set of Rules, by connecting people with places in a way that's affordable, convenient, inclusive and sustainable. Our intent is to earn just enough to cover our costs and continue to invest in being the best and most purposeful carshare operator in BC.

Modo is a co-operative association amalgamated under the Cooperative Association Act (British Columbia) (the "Act"). We are an association of persons united voluntarily to meet our common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise. In a nutshell, we are substantively different than a profit-seeking corporation.

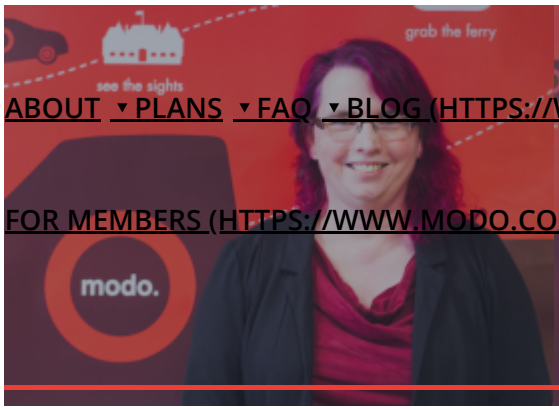
Modo Team

LEADERSHIP TEAM

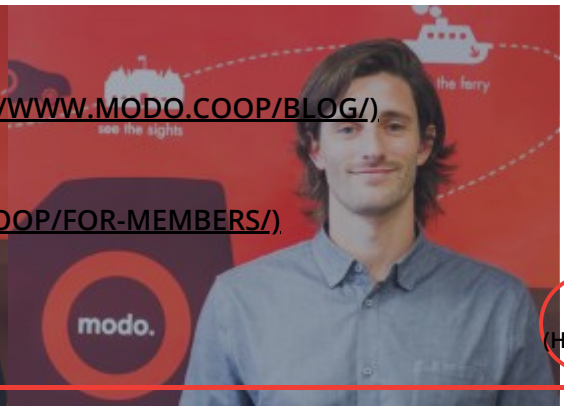


Ian Boorman
Director of Finance

Patrick Nangle
CEO



Karen New
Director of Information Systems



Sylvain Celaire
Business Development Manager

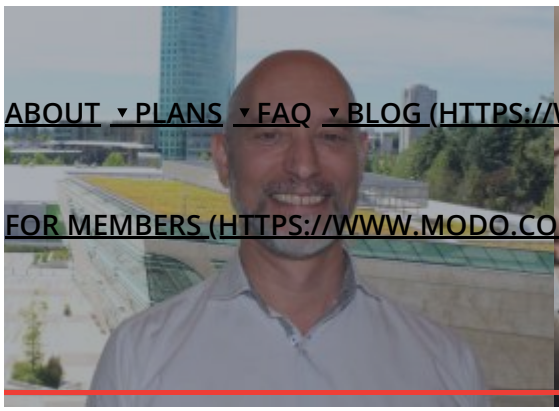
Selena McLachlan
Director of Marketing & Communications

Anthony Okuchi
Director of Fleet Operations

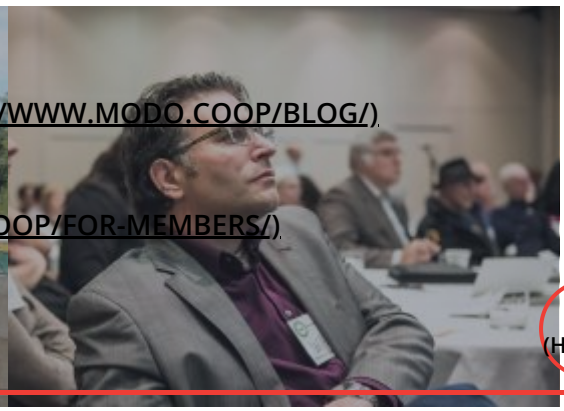
Jason Meraw
Member Care Manager

Bernice Paul
HR and Office Manager

BOARD OF DIRECTORS



Don Buchanan



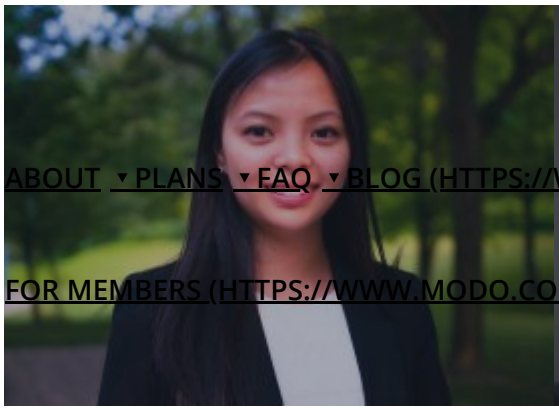
William Azaroff

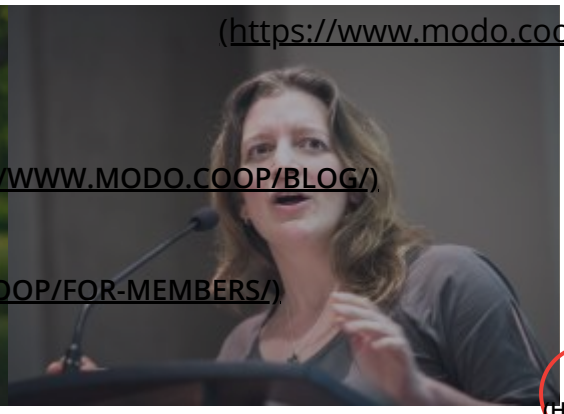
Laura Beattie

Christina Beck
Vice Chair

Arpal Dosanjh

Ruth Legg
Secretary





(https://www.modo.coop/)

LOG IN / BOOK (HTTPS://BOOKIT.MOD

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FOR MEMBERS (HTTPS://WWW.MODO.COOP/FOR-MEMBERS/)

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Jasmine Peña
Treasurer

Amy Severson

SEARCH MODO

Clayton R. Weir
Chair

Contact

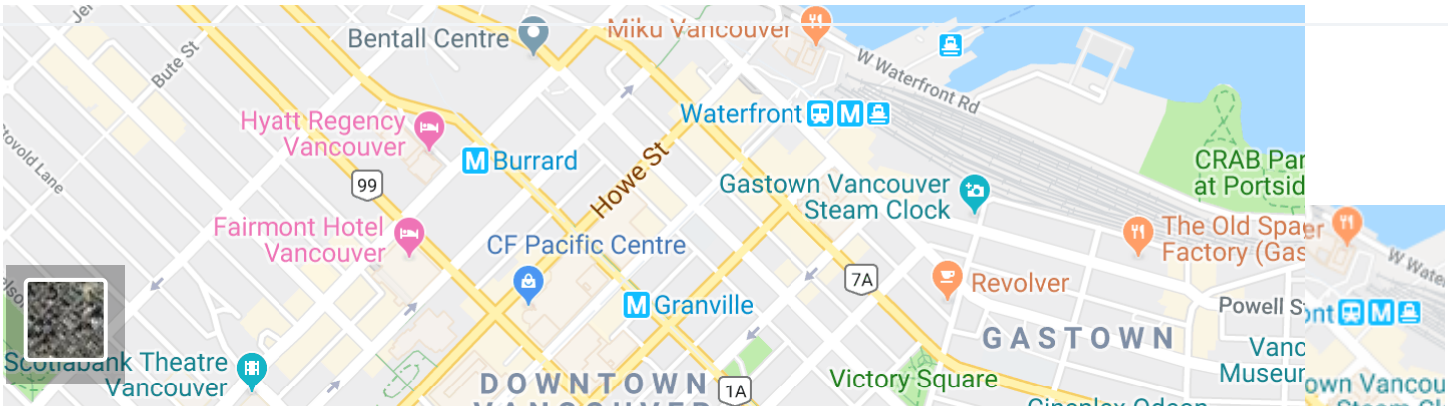
Name

Email

Purpose

Message

Address & Numbers



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About the Parking Tax

Getting you everywhere you want to go in Metro Vancouver

The Parking Tax is a tax paid on the sale of a parking right. The Parking Tax is calculated on the purchase price of parking rights within the South Coast British Columbia Transportation Authority (TransLink) service region, including parking rights sold by hour, month, year or any other basis.

As of July 1, 2010, administration, enforcement and collection became the responsibility of TransLink as governed under the South Coast British Columbia Transportation Authority Act, Section 169, and the Parking Rights Tax Regulation.

To deliver on the commitments in the approved Phase Two Investment Plan, the Mayors' Council has approved a model to fund the region's share of $2.5 billion. $628 million of the region's share will be funded through increased fare revenue resulting from service expansion, and TransLink resources and efficiencies. To raise the remaining funding necessary to meet the region's share and leverage senior government commitments, the Phase Two Plan includes changes to five existing sources - one of which is a 3% increase to the Parking Rights Tax rate. Effective July 1, 2019, the Parking Rights Tax rate will increase from 21% to 24%.

South Coast British Columbia Transportation Authority Service Region

Click to enlarge

Frequent Transit Network

15-minute or better service, 7 days a week

Metro Vancouver's Frequent Transit Network (FTN) is a network of corridors where transit service runs at least every 15 minutes in both directions throughout the day and into the evening, every day of the week. This 15-minute or better service runs until 9 p.m. every day, and starts at 6 a.m. on weekdays, 7 a.m. on Saturdays and 8 a.m. on Sundays. This level of service might be provided by one or more types of transit, such as buses or SkyTrain.

People traveling along FTN corridors can expect convenient, reliable, easy-to-use services that are frequent enough that they do not need to refer to a schedule. For municipalities and the development community, the FTN provides a strong organizing framework around which to focus growth and development.

BENEFITS FOR TRANSIT USERS

- Easy to use and convenient
- Service is frequent enough to not need a schedule for most trips
- Quicker travel times because wait times are shorter
- Easier to make spontaneous trips and know a service will be there if plans change
- The "hop on" and "hop off" level of service makes it easier for people to stop off to run an errand or shop during their commutes

BENEFITS FOR MUNICIPALITIES

- High-quality transit service connects urban centres and major activity areas
- Supports municipal and regional objectives to reduce energy use, air pollution, greenhouse gas emissions and congestion
- Increased certainty about where high-quality transit service is located
- Provides an organizing framework for coordinating land use and transportation

BENEFITS FOR DEVELOPERS

- Increased certainty about where high-quality transit is located helps for making development decisions and investments
- Makes development near rapid transit stations and along the frequent transit network more desirable and easier to market
- May increase rents per square foot and lower vacancy rates for office developments that are within walking distance of a rapid transit station

View the Frequent Transit Network map at **translink.ca/ftn**

The Future of Driving

Policy Directions for Automated Vehicles and New Mobility Services in Metro Vancouver

August 2016

TRANSLINK

Contents

Introduction

Technology's influence on transportation continues to grow, just as its influence continues to grow in all areas of society. While driver systems, such as parking assist and in-car entertainment are now commonplace, a much more significant set of trends is emerging that could transform the way we travel.

Automated and connected vehicles could represent a fundamental change in the role of automobiles, trucks and buses. The ability to operate without a driver creates the potential for drastic reductions in collisions, congestion and infrastructure designs that account for human factors. When combined with advances in car sharing and vehicle pooling, entirely new modes become possible that offer affordable, on-demand mobility without the need to own a vehicle.

The immediate future of this technology is uncertain as there is a range of political, social, demographic, environmental and legal hurdles to be addressed. Industry is responding by investing billions into vehicle technology and mobility services, leaving public policy lagging while governments try to comprehend whether the advantages of automation will be tempered by rebound effects including increased vehicle dependency, reduced revenues from driving, competition for public transit and creeping privatization. Moreover, as with all technological changes, threats to jobs in driving and transportation-related industries must be balanced against the potential gains in efficiency.

Automated, connected and shared vehicles have come to represent a "wicked problem" characterized by incomplete, contradictory, and changing requirements. To date, two approaches have been adopted, either to press ahead with technical testing while solving policy issues in real time, or a more conservative approach of observing and waiting. With the exception of Ontario and Transport Canada's work on technical and safety standards, Canada has largely taken the conservative approach.

TransLink is in a unique position to respond to these trends both as the region's transportation authority, and as the transit operator. Acting under the remit of Regional Transportation Strategy policies to investigate vehicle sharing and new vehicle technology (Actions 2.2 & 2.3), TransLink started by convening meetings with municipalities titled the Future of Driving between September 2015 and April 2016.

Alongside industry and government, the Future of Driving Project provides a vision for how vehicle technologies could assist in meeting Metro Vancouver's mobility aims. This report recommends potential research and policies that will help shape progress towards that vision. It also clarifies some opportunities and preparatory work for TransLink to consider as an operator. These are explained in the body of this report.

Summary of policy recommendations:

1. Update transportation policies and regulations to promote shared automated vehicles in support of regional objectives;
2. Proactively position TransLink to navigate rapid change while maintaining the resiliency of transportation operations and improving the customer experience; and
3. Create opportunities for government, industry and experts to explore and test innovative ideas to harness the positive benefits of automated vehicles and new mobility services.

The Emergence of Vehicle Automation

The following is a brief summary of various studies and reports (see also Works Cited).

Fully-automated (or self-driving) vehicles are cars, buses or trucks that can perform all of the functions of driving using only sensors, communications and computing. These vehicles can operate in all conditions with no driver inputs or with no driver present.

Automation

An automated vehicle is significantly different from driver assistance systems like parking and lane assist which are already available. The Society of Automotive Engineers (SAE) has produced a six-level range of automation.

	SAE Level	Name
Human monitors environment	0	**No automation** the full-time performance by the human driver of all aspects of the dynamic driving task, even when enhanced by warning or intervention systems
	1	**Driver assistance** the driving mode-specific execution by a driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the human driver perform all remaining aspects of the dynamic driving task.
	2	**Partial automation** the driving mode-specific execution by one or more driver assistance systems of both steering and acceleration/deceleration using information about the driving environment and with the expectation that the human driver perform all remaining aspects of the dynamic driving task
Car monitors environment	3	**Conditional automation** the driving mode-specific performance by an automated driving system of all aspects of the dynamic driving task with the expectation that the human driver will respond appropriately to a request to intervene
	4	**High automation** the driving mode-specific performance by an automated driving system of all aspects of the dynamic driving task, even if a human driver does not respond appropriately to a request to intervene
	5	**Full automation** the full-time performance by an automated driving system of all aspects of the dynamic driving task under all roadway and environmental conditions that can be managed by a human driver

At the highest levels (SAE Level 4 and 5) it is argued that total computer control could drastically reduce crashes and congestion as well as remove the barriers of disability or legal driving age.

The magnitude of possible benefits has fuelled enormous investment in developing fully-automated vehicles. Some countries, such as the United Kingdom, are also strongly promoting introduction by allowing controlled testing on public roads. This environment means the technical challenges are gradually being overcome.

Timing

Rapid progress and a degree of hyperbole have led some of the major interests including Google, GM, Volvo, Uber and Tesla to predict fully-automated vehicle launches by 2020, though many technological and automotive experts remain skeptical that this is a feasible timeline.

What is less clear is how automated vehicles will penetrate the consumer market and when they might reach a tipping point of use.

Practical considerations suggest that fleet users may be amongst the earliest adopters. This prediction is supported by the economic reality that driver overheads are a major cost in fleet operations and the fact that commercial vehicles are replaced more frequently than private vehicles.

Interest in fleet uses may also create opportunities for new mobility services to evolve from various current models. For example, it is possible to imagine driverless taxis shared with other users on similar routes as blending taxis, car sharing (Car2Go, Modo) and ridesourcing services (Uber, Lyft).

Automation and dynamic route planning would allow these services to be hailed on demand and may be highly competitive in denser areas where there are

many possibilities for shared trips. If booking these services could also be integrated with transit, bike sharing and other services and paid for simply, the concept of mobility as a service (MaaS - see figure at right) becomes possible.

Consumer confidence may also influence where automation begins to grow. A reported survey by Morning Consult in February 2016 suggests 43 per cent of Americans thought automated cars are dangerous, and that 63 per cent were not likely to buy one in the next decade.

Besides confidence, the potential for private ownership is also influenced by the cost of vehicles. Although the cost of technology will decrease, current automation systems are very expensive and too complex to be retrofitted commercially.

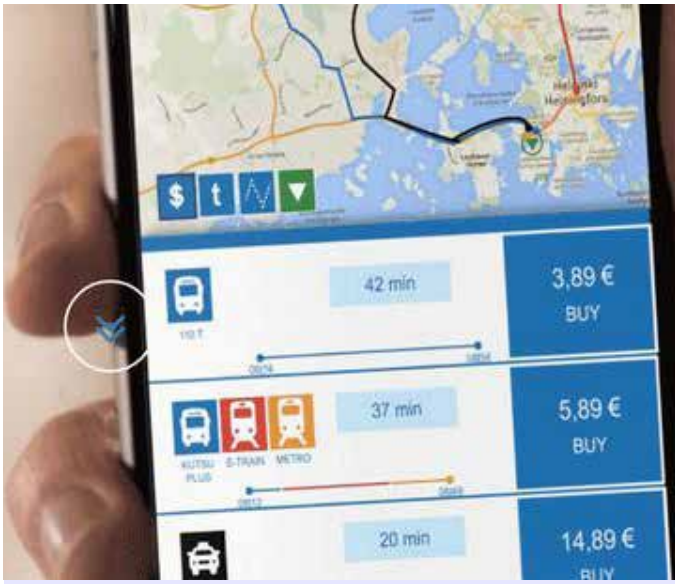
The prevailing technological solution is also a factor on possible expansion. One approach is to make a vehicle fully autonomous, that is to say relying on radar and other sensors to navigate. This approach may require highway infrastructure such as signage and lines to be provided and maintained to a much higher standard than now.

The alternative option is a fully-connected vehicle that uses communication between vehicles (V2V), road infrastructure beacons (V2I) and being part of the "internet of things" (V2X) to complete journeys. This approach may require transponders to be fitted to road infrastructure and carried by road users.

Legislation

It is clear that any one solution, or a combination of autonomous and connected vehicles, will have different implications for governments.

Whatever the technological approach adopted by industry, law-makers never anticipated an absence of human control in vehicles. One critical step will be if software can be widely assumed to have the same role as a human driver, as the US National Highway Traffic Safety Administration decided was the case in February 2016.



MaaS could bring every kind of transport together through a simple smartphone app. MaaS combines transport options from different providers, and manages all trip planning and payments. Users can buy journeys on demand or subscribe to an affordable monthly package similar to a cable contract.

Image credit: MaaS.fi

Other governments are adopting more experimental approaches. The Ontario Ministry of Transportation (MTO) have created experimental legislation to launch Canada's first automated vehicle testing program in January 2016. This pilot will inform provincial and federal definitions.

Regulation of vehicles in use may be even more complex considering the ethical and liability issues in the event of a crash. Furthermore, the definition of mobility services enabled by automated vehicles may require new definitions for car sharing, taxis and transit, similar to the ongoing debate in this region about the role of ridesourcing services such as Uber.

While there is huge investment and energy directed at testing vehicle technologies, there is relatively little evidence of policy frameworks being created

to address the social, economic and environmental impacts of automated vehicles. To this point, in February 2016, Federal Transportation Minister Marc Garneau requested the Senate's Transportation and Communications Committee to report on the regulatory, policy and technical issues for smooth introduction of automated vehicles.

Policy Context

National policy

The *Canada Transportation Act* Review "Pathways: Connecting Canada's Transportation System to the World" provides important recommendations and high-level context concerning federal direction on harmonizing and coordinating innovation in transportation and automated vehicle systems.

Relevant recommendations are included below.

Chapter 5 Innovation

Recommendation 1

The Review recommends that the Government of Canada continue to collaborate with other countries through international organizations to ensure that Canada plays a strong role internationally in the development, adoption and regulation of new technologies and innovation that will enhance the performance of transportation systems.

Recommendation 2

The Review recommends that Transport Canada, in the context of the new governance arrangements proposed for federal involvement in the transportation sector, ensure that an action plan is developed, with specific objectives, implementation plans, and measurable outcomes, to guide Canada's long-term investments in transportation technologies and innovation.

Recommendation 3

With the advent of automated vehicles, the Review recommends that the Government of Canada develop a national regulatory framework that will harmonize Canada's approach with United States legislation with respect to the testing and operation of autonomous vehicles on public roads.

Transport Canada's "Developing a Long-Term Agenda for Transportation" also investigates how new technologies can make transportation systems safer, more secure and competitive while also minimizing impacts on the environment.

The 2016 Federal Budget approved $7.3 million over two years to support the development of a regulatory framework for emerging vehicle technologies including automated vehicles. This announcement came just a few months after the Ontario Ministry of Transportation invited proposals for the development and testing of automated vehicles under a 10-year long pilot project.

Provincial policy

The BC Ministry of Transportation and Infrastructure (MoTI) has not issued any policy guidance at this time on automated vehicles. Its apparent position remains that MoTI jurisdiction on legislative amendment cannot be considered until the Federal Government determines the legality of the vehicles. MoTI staff have, however, contributed to the Future of Driving process and are supportive of further regional discussions including, among others, TransLink, ICBC and the Passenger Transportation Board.

The Minister of Community, Sport and Cultural Development (and responsible for TransLink) is also undertaking a consultative process to examine the regulation of passenger transportation in the province in response to new entrants into the existing taxi industry. There is no date slated for the outcome of this process.

Regional policy

The current Regional Transportation Strategy provides general direction in two main areas:

Strategy 2.2 – Make travel easy and attractive for all users, a key action:

Make it easy to share – by supporting car sharing, ridesharing, bike sharing and taxis including undertaking research on how best to increase trips by multiple-occupancy vehicles.

Strategy 2.3 – Optimize roads and transit for efficiency, safety and reliability, a key action:

Explore opportunities and potential impacts of new vehicle technologies including low carbon, connected, and self-driving automobiles.

The Mayors' Council Vision includes a number of priorities that could be influenced by the trends in automated vehicles if, as expected, this technology develops quickly over the next five to ten years.

These include:

- **Mobility pricing** - across new modes/services
- **Transit ridership growth** – impacts and integration
- **Major Road Network** – demand and capacity forecasts
- **Parking regulation** – management and planned repurposing

Municipal policy

The City of Vancouver accepted a motion in February 2016 asking staff to report back on how automated vehicles will affect existing land use, economic and sustainability plans, and how those documents should be updated. City staff have asked TransLink to contribute regional recommendations to their process.

In addition, the City of Coquitlam, City of Port Coquitlam and Langley Township councils have all indicated their support for the introduction of new mobility services and specifically Uber.

Municipal interests highlight the many uncertainties concerning how different levels of government will need to work together to regulate, plan and manage the impacts of automated vehicles and services. Some regulations will be amendments to accommodate change, such as the legal status of the vehicles; some may require new structures, such as the regulation of services that effectively create new modes; and some will be entirely new, such as the regulation of cyber security in transportation.

Opportunities and Challenges

At this early stage of development, most studies have speculated about potential opportunities and challenges arising from automated vehicles. Some of the potential benefits, such as safety, are being vigorously promoted by industry, but uncertainty suggests a sceptical approach may be wise at this point. The following represents priority considerations for Metro Vancouver:

Safety

The largest opportunity is the potential elimination of automobile crashes caused by human error. Economic impacts caused by traffic incidents, health care costs and lost productivity are at least $10 billion annually in Canada or about one per cent of GDP. In 2013, ICBC reported 61,000 road crash injuries in Metro Vancouver alone. ICBC also reported that 80 per cent of fatalities result from speed, intoxication or distraction, none of which would affect a computer.

Full automation in the vehicle fleet could potentially reduce human suffering and save millions of dollars.

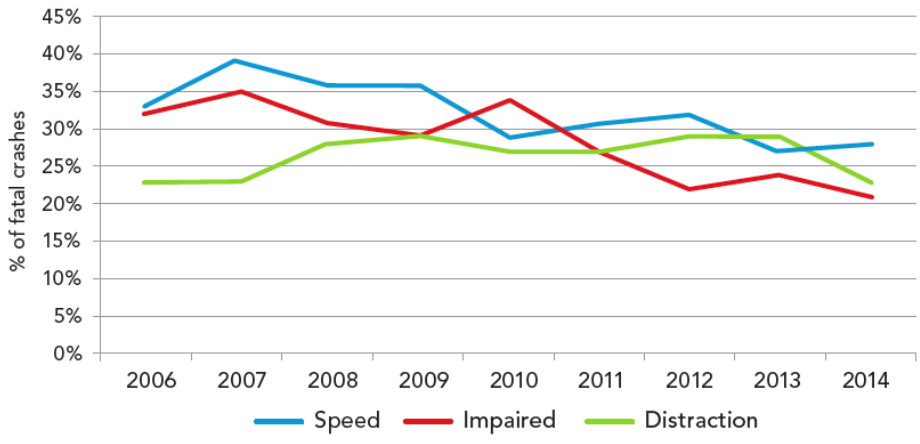
Before these benefits can be harnessed, issues of liability in the event of a crash involving a driverless vehicle need to be resolved. The legal process suggests the need for precedents with the potential to slow or block progress compounded by a potentially long period of transition where both human-controlled and driverless cars drive together.

One particular concern relates to perverse outcomes from risk management. For instance, it is imaginable that there may be calls for automated vehicle-only lanes with subsequent restrictions on access for motorcyclists, pedestrians and cyclists. These vehicles may also pose challenges for traffic-animal interactions.

Accessibility

Automated vehicles could provide accessibility for some seniors unable to drive and for other people with disabilities. In 2012, Statistics Canada reported that 375,000 people in BC had a moderate to very severe disability and that by 2030, one in four people in Metro Vancouver will be a senior.

Top contributing factors in fatal crashes



	2006	2007	2008	2009	2010	2011	2012	2013	2014
Speed	33%	39%	36%	36%	29%	31%	32%	27%	27%
Impaired	32%	35%	31%	29%	34%	27%	22%	24%	21%
Distraction	23%	23%	28%	29%	27%	27%	29%	29%	23%

TransLink's experience with HandyDART suggests that vehicle services in the form of taxis can work well for some people but that everyone has unique needs. While automated vehicles may offer independence to those physically able to use them, many others will always require human assistance no matter how sophisticated the vehicle.

These vehicles could also offer mobility to people without a driver's licence. Related to this, ICBC has reported a marked drop in licensing amongst 18-30 year olds since 2001. It is no coincidence that these Millennials (aged 18-34 in 2015) are described as digital natives and most likely to be early adopters of new technology. This same demographic is also in the vanguard of our multi-modal city dwellers. Removing the need to have a license may be liberating for them but also liable to incentivize vehicle travel unless other controls are in place to manage demand.

Vehicle ownership

Privately-owned vehicles are often reported to be parked for 90-95 per cent of the time. Shared use of this valuable resource could drastically reduce the privately-owned vehicle fleet needed to maintain mobility. Recent growth in car sharing and ridesourcing services has grown at a time when the sharing economy has become a lucrative business model.

Although taxi-like ridesourcing (Uber, etc.) has grown quickly in a short time, peer-to-peer vehicle sharing, where a personal vehicle is rented, is yet to take hold. Automation could enable this using a model similar to AirBnB for private vehicles or through sharing networks under private leasing agreements. Several auto manufacturers are exploring these concepts including partnerships between GM and Lyft, and Google and Uber. Overall, automation may provide the opportunity for vehicle ownership to become far less common.

Modelled impacts of reduced ownership include a 2015 study by the International Transport Forum (ITF). The ITF found that taxibots, or automated minibuses, reduced the number of vehicles needed to maintain mobility in Lisbon, Portugal by 65 per cent, while autovots, or single occupancy shared vehicles, reduced 23 per cent of the vehicles needed.

This positive effect was reduced by the further finding that these services also increased vehicle kilometres travelled (vkt) by six per cent (taxibots) and 89 per cent (autovots). Managing the convenience of vehicles while embracing the opportunity to reduce ownership is therefore an important and complex policy discussion.

Land use

It has been estimated that at a fixed separation of seven metres between vehicles traveling at 100kph, highway vehicle capacity increases from the regular 2,000 vehicles per lane per hour to 5,700 vehicles per lane per hour, though other studies reflect a wider range of estimates.

Connected vehicles may allow this type of close platooning to be possible safely and the technology is well-established with the US Department of Transportation trials dating back to 1997. Again, a caveat for this opportunity exists because while effective for highway travel, platoons are not possible in most urban situations unless provided segregated lanes.

The advantages of lane efficiency through high-speed highway platoons on highway systems have also been cited as risking the promotion of urban sprawl. In Metro Vancouver, limited highway access and the urban containment boundary should reduce any sprawl effects in Metro Vancouver, but these vehicles could make living outside of the region with long distance commutes easier and so support suburban densification.

Relatedly, land use for transportation infrastructure may also change. Vehicles that don't crash could eventually remove the need for human factors to be included in highway engineering. Fewer or narrower lanes and smaller intersections in some areas may

one day be possible but not before a complex period of transition where traffic management would need to consider human-robot interaction.

Finally, a major transportation land use effect could be the reduction of vehicle parking. In the same ITF study mentioned above, both taxibot and autovot scenarios completely removed the need for on-street parking and up to 80 per cent of off-street parking. To give a sense of scale, a 2008 study of downtown Vancouver found 60,500 commercial parking spaces, equivalent to roughly one square kilometre of land.

Reduced parking presents the potential for street space to be repurposed as parks, sidewalks, bike lanes or transit lanes and for development to be more compact and affordable. But once again this presupposes an efficient way to manage a prolonged transitional period and the need for advice on when and how to repurpose space.

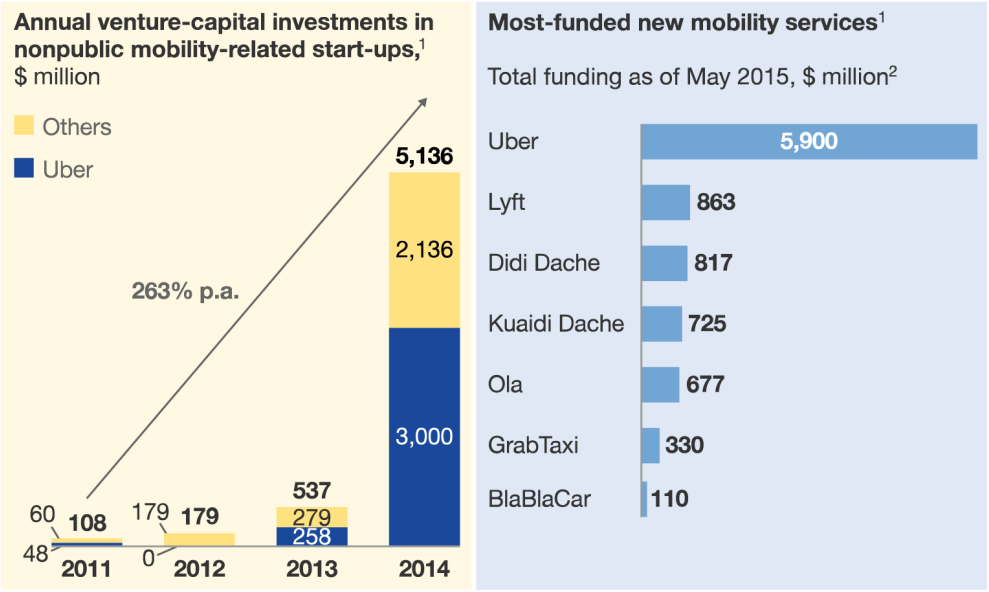
Privatization

Advances in vehicle technology have previously been progressed incrementally by auto manufacturers to improve comfort and safety. Some tech-based companies have leap-frogged this in a push for full automation and in the process have created pressure on government to change regulations as they race to launch services.

It is important to consider that industry ideas for how automated vehicles will come to market are typically private with on-demand or member-based services.

It is too early to predict business models but a risk of increased privatization in transportation could lead to aggressive competition for profitable transit markets in preference to offering access for lower income or low-density communities. It is relevant that, depending on the metric used, between one in seven and one in 10 in BC live below the poverty line and about 90,000 low-income seniors and persons with disabilities receive a subsidized BC Bus Pass.

Infographic: McKinsey & Company chart the fund raising progress of new mobility services as a means to illustrate the exponential growth in capital and diversification.



[1]By total funding raised to date. Publicly disclosed information only.
[2]Does not include mobility services offered by automotive OEMs (eg, DriveNow, Car2Go), as data are not disclosed.

McKinsey&Company | Source: CrunchBase; PitchBook Data; Preqin; Venture Scanner

Irrespective of the business model, indications are that new mobility services could be operated more affordably than conventional transit in some circumstances and so could allow greater coverage for the same resources.

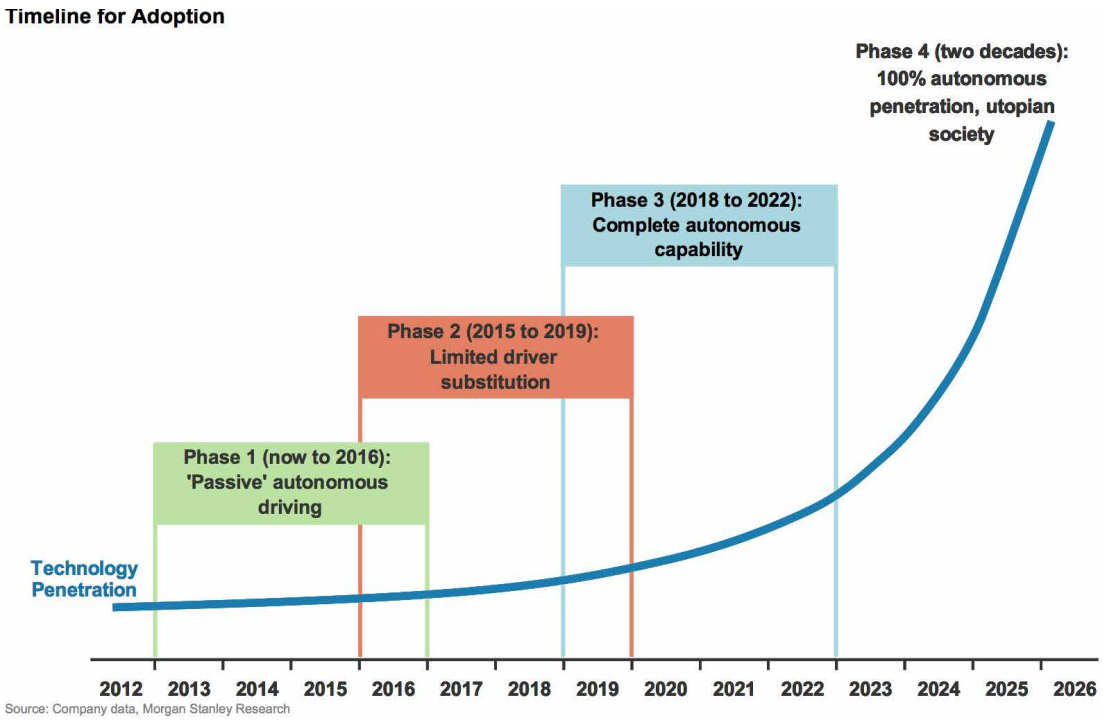
The possibility of new service options expanding access to transit raises some regulatory questions, for instance, in relation to minibus ridesourcing (micro transit) which is similar in practice to Independent Transit Services but could be regulated under the Passenger Transportation Board similar to taxis. To be efficient and fair requires effective regulation as part of more integrated network management of multiple services.

Emissions

Greenblatt/Taxena (2015) estimated that a self-driving, electric taxi in 2030 would produce 90 per cent lower greenhouse gas (GHG) emissions than a 2014 privately-owned gasoline vehicle, and 63 to 82 per cent fewer GHG emissions than a privately-owned hybrid vehicle due to reduced dependancy on privately-owned vehicles and improved efficiency of networked vehicles.

There are suggestions that the flexibility of vehicle design offered by automation could increase the opportunity for new zero or super-low emission vehicles. This would be accelerated in Metro Vancouver if regulations on emissions are strengthened under the provincial Climate Action Leadership Plan.

Nevertheless, current trends are not as hopeful. In 2014, all hybrid vehicles only represented two per cent of the of the personal vehicle fleet in Metro Vancouver. It is also notable that between 2001 and 2013 gas powered light trucks increased from 30 per cent to 40 per cent of all vehicles.



Employment and economy

In 2014, 19,000 people in BC were employed in vehicle manufacturing and an additional 75,000 were professional drivers. A major expansion of driverless vehicles could heavily impact the viability of these jobs, although major changes would likely happen gradually, allowing some people time to retire and others to convert skills.

There could also be a range of allied professions that may be impacted including auto retailing, crash repairs, driver licensing, enforcement, and emergency services. At the same time, many new jobs could be created in design, software, sensor manufacture and data management.

In addition to employment change, automated vehicles could change how government revenues are derived from driving. Depending on how vehicle services develop, parking revenues, enforcement penalties and fuel taxation could all be heavily reduced. Alternative methods to pay for transportation and other public services will take on greater importance, including distance-based pricing or tolls to manage growth and to ensure service providers pay towards the infrastructure they will use.

Data privacy

Automated and connected vehicles will produce huge amounts of data from on-board and remote systems that must be protected from cyber attack.

Positively, the data produced would present an unprecedented opportunity to model and manage traffic in real time, which could be used to improve customer information and fine tune pricing. Naturally, this proliferation of data comes with huge responsibility and the need for complex management to maintain privacy and protection from hacking.

The access to detailed vehicle data, which could identify drivers, also raises new social, policy and ethical questions that may not be easy to answer. An example of the dilemmas includes whether the police should be allowed to take remote control of a vehicle containing a suspect.

Future of Driving Project

The Future of Driving project was initiated in response to municipal interest in automated vehicle technology and the potential need to accommodate this technology in future transportation and land use policies. A series of municipal information sessions was arranged in Fall 2015 and early 2016.

The objectives of the project were to work with municipal, government, research and industry stakeholders to:

- Establish a common understanding of the key issues for stakeholders in regards to automated vehicles in the region.
- Explore how automated vehicles and services might impact:
  - Mobility pricing and regulation;
  - Land use and parking policies;
  - Managing transportation network capacity;
  - Travel demand growth forecasts and infrastructure needs; and
  - Implications for goods movement and mass transit operations
- Support municipalities to respond knowledgeably to public and Council interest about automated vehicles as they relate to local, regional, and provincial planning objectives.

The project included four information sessions starting in September 2015, each with a particular discussion theme and supported with expert speakers:

- **September 24, 2015** - Municipal Information
- **October 29, 2015** - Carsharing Systems
- **November 26, 2015** - Infrastructure and Street Management
- **February 1, 2016** - Policy Gaps and Opportunities

A final forum was then arranged in April 2016 that used scenario-planning techniques to establish consensus on an ideal end state for automation.

This session produced a **preferred scenario for a Mobility as a Service** (MaaS) **system linked to structured mobility pricing to manage increased potential for vehicle distance travelled and support increased use of public transit**.

The forum exercise concluded with a facilitated discussion to agree potential research, policies and actions needed to shape the development of automated vehicles towards the preferred scenario. These thoughts have been included in the policy recommendations that follow.

Details of the forum process are included in Appendix A with a record of the outcomes from the discussion in Appendix B.

Future Policy Recommendations

To frame regional policy, it must be assumed that other levels of government are actively working to resolve issues related to the legislative status of automated vehicles; the regulation and licensing of related services; and the public interest issues of data privacy and safety. These assumptions allow these recommendations to focus on regional actions for Metro Vancouver.

Note: In light of the pace of development, these recommendations are time-sensitive and may need regular review.

Recommendation 1:

Update transportation policies and regulations to promote shared automated vehicles in support of regional objectives.

Issues:

Automation could solve some of the most pervasive problems of vehicle-based mobility. Equally, automation could make vehicle travel cheaper, more convenient and easier to access adding to other problems. This risk is acute if automated vehicles grow through private ownership and create unmanaged opportunities for discretionary use by people who did not previously drive.

In addition to effective management policies, the encouragement of shared multi-occupancy vehicle use may become a much more important objective in the near-term. It could be desirable to help create a market demand for more sharing now to influence new services in the future and to enable a long-term decoupling of ownership from mobility.

Potential actions:

- Introduce region-wide road usage charging to manage demand for increase vehicle usage resulting from automated vehicles;
- Encourage car sharing and multi-occupancy vehicle use through incentive programs and priority parking, including at transit hubs; and
- Strengthen the role of active transportation by rapidly increasing investment in safe, attractive and direct walkways and bikeways and pedestrian and bicycle priority areas.

Recommendation 2:

Proactively position TransLink to navigate rapid change while maintaining the resiliency of transportation operations and improving the customer experience.

Issues:

The general expansion of technology in transportation provides opportunities for access to new services, safety, system efficiency, payments and customer services.

Changes in how private vehicles may be owned and used may also significantly change employment and sources of funding.

In addition to collaborative work required to shape policy outcomes, action is warranted to prepare operational strategies that manage transitional phases and embrace the benefits while also minimizing risk. Keys to this will be developing better forecasting and developing an understanding of opportunities as trends evolve.

Potential actions:

- Actively participate in any review of the regulatory relationship between ridesourcing, micro transit services and Independent Transit Services;
- Plan for reductions from parking and fuel sales taxes; and
- Work with operators to review near-term opportunities to implement driver assistance systems.

The driver assistance technology, called Mobileye Shield+ by Rosco Vision Systems, uses four bus-mounted vision sensors to identify and alert bus drivers when pedestrians, cyclists or vehicles are in close proximity to a bus.

Photo credit: King County Executive Department of Transportation

Recommendation 3:

Create opportunities for government, industry and experts to explore and test innovative ideas to harness the positive benefits of automated vehicles and new mobility services.

Issues:

There are great uncertainties concerning the pathway to increased automation and how the end state will affect personal mobility. Many jurisdictions are approaching this by encouraging industry to test technology while they review legislation and regulations in parallel. This will undoubtedly advance the technical competency of vehicle systems but could create difficulties in achieving user-centred outcomes.

A way to achieve a greater appreciation for the needs and impacts on people is to take a user-centred design approach. For such a complex and interconnected issue as automated vehicles, this approach would require collaboration between government, industry and other experts, possibly using a social innovation lab. Labs are testing beds used widely to address complex social issues in other fields of work and could provide a useful way to facilitate the necessary multi-disciplinary interests in automated vehicles and services.

A social innovation lab also offers a space to combine other related and similarly complex issues such as mobility pricing and the sharing economy to help establish parameters for Mobility as a Service type payment and information systems.

Potential actions:

- Collaborate with partners to set up and fund a social innovation lab that would explore:
  - Concepts for Mobility as a Service (MaaS) systems including integrated payment across all modes from a single mobility account;
  - Ways to expand car sharing and multi-occupancy vehicle use across the entire region;
  - Expand public transit service delivery models including flexible last-mile services; and
  - New geometric designs that reflect the impact of automation on traffic and engineering.

Next steps

This briefing sets out policy directions from a first stage of investigation and discussions into the potential transformation indicated by our current understanding of automated and connected vehicles.

The Future of Driving project has shown that much more work is needed and that no one organization is ideally placed to shape policy. The next step is to find ways to collaborate across government, industry, academia and communities to increase common understanding and purpose.

Works cited:

Driving Changes: Automated Vehicles in Toronto, UTTRI, (2015)
Driving Towards Driverless: A Guide for Government Agencies, WSP Parsons Brinckerhoff (2016)
Preparing for Autonomous Vehicles in Canada, CAVCOE, (2015)
Urban Mobility System Upgrade, OECD International Transport Forum, (2015)
Self-driving cars: The next revolution, KPMG (2012)
The Future of Automated Vehicle Technologies in Ontario, Mowat Centre (2015)
The Pathway to Driverless Cars, UK Department for Transport (2015)
Road vehicle automation technologies: anticipating the impacts on urban travel and land use, Loro. A (2014)

Appendices

Appendix A – Future of Driving Forum

Forum process and findings

Following four Future of Driving information sessions, a final forum was organized to conclude the first phase of the Future of Driving Project. The forum summarized feedback and interests from previous information sessions, and went on to debate potential future scenarios as a means to agree possible policy actions.

Staff recognized that the innovations and technologies discussed in the four information sessions could be used, combined, and taken up by the public in countless ways. Rather than tracing all these variations and making projections into the future, scenarios were constructed as an established method of grappling with uncertainty and considering how they might impact existing policy objectives.

Scenario 1 - Status Quo (single occupancy, auto-dependent)

Mobility	Vehicle occupancy: Single occupancy	Vehicle occupancy: Multi-occupancy
Multi-modal	Uncoordinated Mobility	Coordinated Mobility
Auto-dependent	Status Quo	Motor City

Four scenarios were developed using two axes of uncertainty that have particular relevance to regional planning aims: mobility and vehicle occupancy. The characteristics of the four scenarios are described at right.

By 2030, automated driving has led to major improvements in the efficiency and economics of automobiles. Metro Vancouver residents are still highly dependent for transportation on single-occupancy vehicles. This takes the form of mainly personally owned vehicles in suburban and rural areas while driverless taxis become prevalent in denser centres.

Even though automated driving of personal vehicles has improved efficiency of the road network, a significant amount of automated vehicles will be privately owned with low occupancy leading to increased urban congestion. However, the technology's efficiencies will reduce highway congestion from levels seen today. This means people are now able to commute longer distances in the same amount of time. However, as this style of mobility comes at a higher cost, public transit is still a competitive option for those living in certain areas (e.g. transit-oriented developments and regional centres) and of certain income brackets.

Planned investment in key transit projects has expanded access to new areas of the region, but improved vehicle efficiency prevents significant shifts in overall mode share towards transit.

Scenario 2 - Motor City (multi-occupancy, auto-dependent)

By 2030, automated vehicles and mobile technology are highly advanced and ubiquitous.

While advances have made vehicle travel more economical, broader market conditions have made ownership prohibitively expensive – overall there is a continued dependence on cars, but a major shift toward sharing.

A wide array of vehicle-based services evolve to meet most needs. Shared self-driving taxi services are seen widely, carpooling is increasingly common, and new contracts for private vehicles allow them to be shared when not in personal use. With cars less likely to be under-used, the price for vehicle mobility is greatly reduced.

The availability and cost-effectiveness of vehicle mobility reduces the viability of some transit services and constrains expansion. Over time less income from transit ridership as a whole reduces service expansion with resulting declines in use.

Patterns of use reduce downtown parking demand but increase distances travelled in reverse peak directions as automated vehicles leave core areas after dropping clients at destinations. To reduce distance travelled and the costs of down-time for these services (e.g. parking costs or continued circulation), demands for out-of-centre holding centres with cheap parking and charging facilities create large new parking land uses.

Scenario 3 - Uncoordinated Mobility (single occupancy, multi-modal)

By 2030, residents of Metro Vancouver are comfortable using a variety of modes to satisfy their mobility needs and they have many free market options.

For longer commutes, mass rapid transit is highly competitive (in terms of efficiency and cost) with cars. 'Last mile' trips are accomplished through a choice of active transportation and vehicles, depending on the economics of the final destination (i.e., within a transit-oriented development, walking and cycling is preferred over cars; for more distant destinations, vehicles are used). A new breed of small, light, clean micro vehicles designed for denser city living come in a range of configurations from bikes to single-occupant vehicles and are available as pay-per-use services or are privately owned. New facilities for storing and charging them replace downtown parking.

Last mile vehicles also provide part of the transit offering in suburban centres where they replace some traditional bus demand. The integration of last mile services into transit operations allows a focus on fixed route bus and rail transit to support interurban links.

Outside of centres, where transit services are less economical, traditional vehicle ownership remains high. Peer to peer sharing (AirBnB for autos) grows as service models emerge which enable people to earn income to offset the cost of vehicle ownership.

Scenario 4 - Coordinated Mobility (multi-occupancy, multi-modal)

In 2030, automation and connectivity have revolutionized transportation. A regulated mobility industry has developed to allow many new services to develop to support niche needs. The public is able to buy mobility similar to a utility where a package is purchased customized to their needs.

Price is regulated to maintain a viable role for traditional and new variants of bus transit including self-driving micro transit and shuttles. The revenue from this regulated system pays for high-quality interurban fixed routes with seamless last-mile service connections, reducing the need to use an automobile.

Sophisticated scheduling enables high average occupancy in shared vehicles. Private vehicles are increasingly purchased or leased as part of shared mobility contracts, which make them available to a membership when not in personal use.

For those not able to afford a mobility package, and despite price concessions for some groups, there are claims of social inequalities.

Impacts to objectives

The four scenarios were then assessed for their potential impacts against nine key objectives from the Regional Growth and Transportation Strategies as well as importance to municipal participants. The objectives were edited assuming that some would be similarly affected under all scenarios. The nine objectives assessed against the scenarios are shown below with the metric used to score the anticipated effect.

Objective	Measure	Scale (1 – 5)		
		1	3	5
Increase in walking, cycling and transit	Mode Share	Less than now	Same	Even more
Reduce need to own a car	Cars per household	More	Same	Less
Reduce distance driven	VKT	More	Same	Less
Improve regional accessibility including for those with limited auto availability	Population able to access the region through non-auto modes	Less	Same	More
Ensure efficient and reliable movement of people	Travel times	More	Same	Less
Reduce reliance on fossil fuels	Consumption	More	Same	Less
Ensure transport safety	Fatal injuries	More	Same	Less
Support a compact urban area	Sprawl	More	As is	Denser
Reduce cost to individual	Cost of mobility	Costlier	Same	Cheaper

This process was conducted for all four scenarios and generated a general consensus that the greatest benefit would arise from a Coordinated Mobility scenario of shared, multi-modal and multi-occupancy transportation as shown below.

Note: The Compact Area objective could not be scored in time.

Objectives	Scenarios			
	Status Quo	Motor City	Uncoordinated Mobility	Coordinated Mobility
Increase in walking, cycling and transit	3	2	3	4
Reduce need to own a car	3	4.5	4.5	4.5
Reduce distances driven	3	5	4.5	5
Improve regional accessibility including for those with limited auto availability	3	4	4.5	5
Ensure efficient and reliable movement of people	2.5	3.5	4	5
Reduce reliance on fossil fuels	2	3	4	5
Ensure transport safety	4	4	4	4
Support a compact urban area	Not scored			
Reduce cost to individual	3	4	4	3

Appendix B - Gaps, Research & Next Steps

Collaboration, coordination and role clarification

Policy Gaps

- Define roles of federal, provincial, regional district, municipalities in AVs
- Municipal policy coordination and linkages
- Policies to encourage private – public coordination
- Organize consensus amongst all municipalities adopting the policy advice

Research needs

- Hierarchy of policies related to automated and new mobility service providers needs to be defined from Federal (Transport Canada) through the Province (MOTI/ Minister of TransLink), Regional (Metro Vancouver) and Municipal.
- Mobility service providers to react/gauge/plan for future mobility
- Baselining current government activities in Canada relative to the US

Next steps

- Continuing forum group and expanding to industry, public and others
- Determine TransLink's role and other roles – federal government down
- What is TransLink appetite for change? - (Re) defining transit and TransLink's role as a mobility authority
- Government (definition of who's doing what and hierarchy) - in many respects will influence next steps for TL/ Future of Driving
- Define what we (MOTI, TransLink, MV, Muni's) Can and can't do/ have a say in
- Advocate to senior level governments for preferred changes (policies, regulations/ deregulation)

Communications, education and public awareness

Policy gaps

- Consultation & outreach (will be affected by the definitions from higher-levels of government about what we're allowed to do/ have say in)

Research needs

- What are residents interest, values, ideas, acceptance of AVs, willingness to participate

Next steps

- White paper/TransLink policy statement
- Be used as a reference for a request of funding to assess impacts and interplay of changing / autonomous vehicles and how municipalities, TransLink should respond
- Policies recommendations for further study in areas noted
- Setting a framework for discussion with stakeholders on proactive measures to provide proactive steps to manage potential
- Higher level assessment of risks and opportunities
- Potential actions for government organizations
- How we move forward
- Communicate to residents why we are doing this work
- Communication network – forum and others to continue discussion (Same as Forum in collaboration category)
- Communication and engagement with industry
- Establish a communication network for FoD ongoing – work with MoTI/ Metro Vancouver
- Establish a communication process for industry
- Internal (agency staff) - planners to allow for improved understanding of future of driving

- Operators to offer proactive insight to how new technologies/ service change the landscape of transportation provision

Consumer protection and equity

Policy gaps

- Protecting against price gouging / surge pricing
- Ensuring equity/ uniformity of pricing across demographics, geographies
- Accessibility/equity – research concessions

Research needs

- Research policies to protect all levels socio-economic levels to ensure equality of all users

Controlled trials

Next steps

- Controlled AV trials (TransLink and/or Industry) in one neighbourhood (UBC, YVR, other)
- Testing for safety of vehicle + occupant
- BC allows controlled trials
- Businesses / mobility service providers: pilot testing
- Options – coverage areas + service integration

Data

Policy gaps

- Encouraging sharing – incentives, insurance, regulation
- Addressing privacy concerns
- Central location to store all data collected and organized
- Requiring data sharing (trip and mode information) to and from government
- Service providers providing valuable data to government
- Government making its of transportation data available in open data formats
- Licencing and access

Research needs

- How will technological “refresh” cycles effect:
- The ability for regulatory/ government reaction
- Change management

Insurance and licensing

Research needs

- Encouraging insurance
- Licensing / Operators / Drivers

Modelling, scenario development and behavioral studies

Policy gaps

- Need to develop a new model, trigger and decision making framework transportation forecasting.

Research needs

- Modeling a transitional period – traffic management and service access & decision criteria
- Using scenarios to forecast and see impacts to objectives
- Forecasts on modes and how new services and automation may impact:
- Impacts to accessibility + equity
- Revenue impact
  - To municipalities - parking
  - TransLink – fuel tax, fares etc.
- Labour
  - Disruption
  - Re-skilling needs
- Financial
  - Marketability of scenarios
  - Impacts

- On user cost – savings?
- Businesses
- Government investment
  - Infrastructure costs, roads, paint etc. – will require more updates/ technological investments?
- Neighbourhood – level scenario development and evaluation
- AVs + forecasting / projections standards
- Market uptake of new services (and uptake under different regulatory controls/ levers)
- User behaviour as a result of new services
- Across different demographics, geographies and land uses
- Research how user's mobility behaviours are forecast to change under different scenarios of service introduction/ uptake
- Land use – testing service uptake in areas that are explicitly design for these mobility service to serve them directly (think of communities that are explicitly built around no car ownership)
- Develop business case for various scenarios
  - Models
  - Service levels
  - Cost for users
  - Impacts to traditional transit services
  - Impacts to private transportation companies
- TransLink should review:
  - Potential impacts to traditional services
  - Review options for coverage areas and how competition could compliment or integrate service.

Municipal and regional goals and plans

Policy gaps

- Sustainability / policy objectives need to be updated/ revisited because they may not apply when new tech and services are available
- Confirm priorities / position
- Ensuring new services meet sustainability objectives
- Municipal bylaw revisions
- Regional Needs Coverage / Adaptability not just City of Vancouver

Research needs

- Develop framework that permits /encourages technological advancement but also protects users to ensure accessibility, safety and a level of socio-economic equality
- Bylaw scan – what has to change?
- Parking guidance

Price regulations

Policy gaps

- Mobility pricing

Research needs

- Price regulation – define and investigate, revenue/costs splits

Safety

Policy gaps

- Regulations in vehicle construction
- Policies on communication coverage
- Communications security

Research needs

- Safety of:
  - Vehicle occupants
  - Vehicle to vehicle
  - Vehicle to infrastructure
  - Vehicle to other road users (pedestrians, cyclists, dogs etc.)

Transportation systems and infrastructure

Policy gaps

- Road classification / traffic calming
- Revisions to Motor Vehicle Act
- Communication with enforcement to pull over vehicles
- Policies on judicial process for motor vehicle incidents
- Geometric standards and urban design advice – modernization fund
- Retrofitting infrastructure
- Technical infrastructure investment – municipal traffic management centres – ITS Canada feasibility
- Parking regulation and guidance

Research needs

- Understanding service characteristics for MaaS models for diverse communities
- Technical direction on vehicle recognition vs. infrastructure (V2I, mapping, maintenance)
- Designing for AVs not retrofitting – guidance
- Transportation demand management
- Impacts to transportation discipline
- Model projections
- Capacity
- Traffic impact studies for developments
- TDM forecasting for volume / capacity analysis – need to change

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New Mobility Lab

Getting you everywhere you want to go in Metro Vancouver

The New Mobility Lab is our new engagement portal for post-secondary institutions, researchers, and university students.

We provide stable, multi-year funding towards a coordinated program of applied research aimed at answering new mobility related questions of relevance to us and our local government partners.

New Mobility Research Grant Program (NMRG)

This program provides research grants of up to $50,000 to well-defined projects undertaken by Canadian post-secondary researchers and their partners.

NMRG projects may range from one year to two years in duration and can span a range of disciplines, including, engineering, planning and policy, urban design, computer science, environmental and resource science, business, psychology, sociology, and economics.

The NMRG Program is now accepting applications:

- New Mobility Research Grant Program Information Package
- New Mobility Research Grant Program Sponsored Research Agreement Template

All projects must relate to a new mobility theme and must have regional or local relevance.

UBC Sustainability Scholars Program

In 2018, TransLink engaged three UBC graduate students through the UBC Sustainability Scholars program to conduct research on new mobility topics. These reports are now available:

- Transit On-Demand: Case Studies & Recommendations to Support New Mobility Options on Bowen Island (2019)
- Industry practice scan of methods, technologies and formats of on-demand and shared-use mobility services data (2019)
- Identifying Best Practices for Mobility Hubs (2019)

In 2019, TransLink is engaging another three students through this program to research:

- Economic Impacts of Shared, Automated and Electric Vehicles (SAVEs) in Metro Vancouver
- Using Blockchain to enable a Sustainable Sharing (Transportation) Economy
- Using Autopiloted Aerial Vehicles (Drones) to Provide Passenger Mobility and Freight Services

Check back in Fall 2019 for the outcomes of this research!

Pop-up parklet in cooperation by Walas Concepts Inc, 1489 Frances St

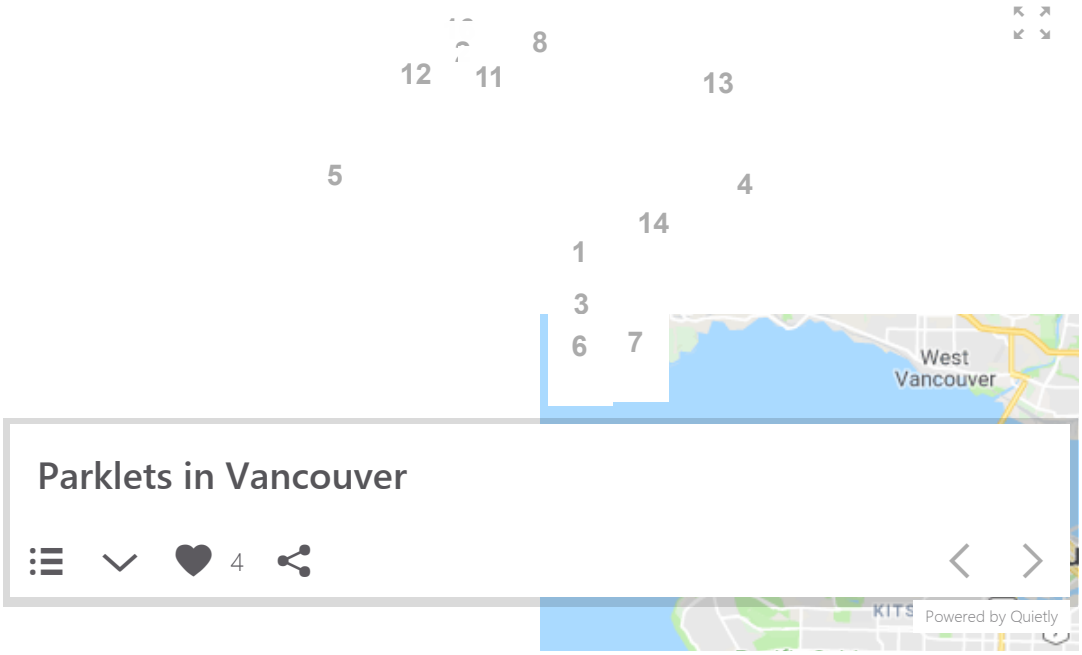
Parklets: converting street parking into public spaces

A parklet is typically an extended platform over a parking space, and can include benches, tables, chairs, landscaping, and bike parking.

They are designed and built by local designers, and offer interesting public spaces for people to sit and relax.

Put on your walking shoes or grab a bike and check out Vancouver's parklets.

On this page:



Run a business or an organization? Consider a parklet

Parklets are sponsored by private partners but are free and open for any member of the public to use.

Advertising, table service, and other commercial activities are not permitted.

The process from application to installation generally takes 8 to 12 months. If you're interested in having the parklet installed for the summer season, we encourage you to submit your completed application in early fall at the latest.

Parklet benefits

- **Dynamic public spaces** – Parklets provide places for people to sit, relax, and enjoy the city.
- **Wider sidewalks** – Parklets can provide more space for people to walk where sidewalks are narrow or congested.
- **Vibrant local businesses** – Parklets are unique public spaces that provide seating and attract potential customers.
- **Social life** – Parklets foster a sense of community by creating welcoming public spaces.

How to apply for a parklet

We're currently in the implementation stages of parklets and will not be accepting any applications until fall 2019. We'll be holding an open house this fall. Check back for updates.

If you're a non-profit organization interested in a parklet, please contact us.

1. Read the manual to learn about the application process, fees, responsibilities, design guidelines, and technical requirements.

- Parklet manual (9 MB)

2. Contact VIVA Vancouver to discuss your application prior to submitting it (parklets@vancouver.ca)
3. Complete the application form.

- Application form (90 KB)

4. Apply in person with your completed form and $204 review fee to:
   VIVA Vancouver
   5th floor
   507 West Broadway (at Cambie St)
   Vancouver, BC V5Z 0B4

Parklet Program history

Tested for several years, City Council approved the Parklet Program on June 1, 2016.

VIVA Vancouver is now looking for interested businesses and organizations who want to sponsor and build their own parklet.

Read the Monitoring Summary Report (3 MB)

Read the Council Report

Skip to content

Getting you everywhere you want to go in Metro Vancouver

Pilot and Demonstration Projects

In an environment of rapid technological change, collaborating with innovators to try out, evaluate, and refine new ideas in real-world settings is a cost-effective way for us to learn and adapt quickly.

We are interested in collaborating with you to further develop your pre-commercial ideas, offering access to TransLink assets where you have a near-commercial idea that needs real-world testing, and partnering with you to pilot your market-ready ideas on a larger scale.

Where pilot and demonstration projects show good results, TransLink will consider incorporating them into our regular business.

Active Pilot and Demonstration Projects

Artificial Intelligence Bus Prediction Pilot

We're undertaking a pilot project to test the effectiveness of machine learning to improve bus arrival and departure predictions.

Machine learning is a technique that uses statistical models to give computers the ability to learn and create predictions based off past data.

As part of this pilot project, 10 bus routes will be selected and tested with these new predictive models. The project is expected to improve the accuracy of these predictions by 70 to 95%, which means fewer missed connections and a better customer experience.

If this pilot is successful, we'll look to implement it across all routes.

Electric Battery Buses

Our electric battery bus pilot project is part of a pan-Canadian initiative led by the Canadian Urban Transit Research and Innovation Consortium (CUTRIC).

The 2.5-year project will put electric battery buses on route 100 traveling along Marine Drive through Vancouver, Burnaby, and New Westminster.

At each end of the route (Marpole Bus Loop and 22nd Street SkyTrain Station), the buses will get a full charge in approximately 4 to 7 minutes.

Over the course of the project, we'll collect data on bus and charging station performance, maintenance, and the overall customer experience. The pilot will provide valuable information for our Low Carbon Fleet Strategy, which envisions a future with a zero-emission bus fleet.

Vanpool

Many people in this region work in places that are difficult to access by conventional public transit. To help provide affordable, shared-use mobility in these cases, we're partnering with Modo to develop and test different approaches to offering Vanpool services through the use of existing car-share vehicles.

We're in the process of identifying suitable locations for this pilot. If you are a business or employee that would like to help us launch a Vanpool service at your workplace, please get in touch at vanpool@translink.ca.

Dockless Bikesharing at UBC

The University of British Columbia (UBC), in partnership with TransLink, is piloting a dockless bikesharing system on its West Point Grey campus.

Unlike station-based bike sharing, dockless bikesharing requires no infrastructure to park bicycles and they can instead be locked to themselves.

The bicycles are located and unlocked using a smartphone app. These systems offer flexible bike sharing options to more parts of the region at lower cost.

However, in other cities these systems have also presented urban space management issues where large volumes of bicycles in high-demand locations have often impeded public rights-of-way.

This pilot launched in Aug. 2018 and will run through the spring of 2019 with hundreds of bike available to rent on campus. We will use the learnings from this pilot to contribute to the development of guidelines to help municipalities better manage personal on-demand mobility services like bike sharing.

Visit UBC's Dockless Bikeshare page for more information.

Adopted Projects

Double-Decker Bus

To provide increased transit capacity and a more comfortable ride for long-haul customers, we piloted the use of double-decker buses on seven long-haul bus routes in Vancouver, Langley, Surrey, White Rock, and Delta.

Using buses provided free of charge by bus manufacturer Alexander Dennis, the pilot project ran for 4 months from Dec. 2017 to March 2018. During the pilot, we tested how the new vehicle type performed in Metro Vancouver both from a customer experience and operational standpoint.

Over 600 customers provided feedback during the pilot and the feedback was overwhelmingly positive. Customers were especially pleased with the increased capacity and comfort of the bus.

Operationally, the bus performed well during the pilot scoring well in drivability, ease of maintenance, and fuel economy.

Based on the results of this pilot, TransLink issued a request for proposals for 32 new double decker buses which we plan to add to our fleet by mid-2019.

Universal Fare Gate Access Program

The program provides participants with radio-frequency identification (RFID) cards that will automatically open the fare gate when the card comes within range and close once the customer passes through.

See which SkyTrain Stations have these new RFID readers installed so far and learn more about the program and this first-of-its-kind technology developed here in Metro Vancouver on our Universal Fare Gates page.

Mobility Hubs

To provide customers with the flexibility to combine driving and transit, we've partnered with Modo and Evo to created dedicated carsharing parking spaces at select SkyTrain Stations.

Our Park and Ride page has a full list of which stations have dedicated Modo and Evo parking.

For those that prefer cycling, we also provide three different types of bike parking at SkyTrain Stations, bus exchanges, and West Coast Express stations throughout Metro Vancouver including secure bike parkades accessible with your Compass Card.

Visit our Bike Parking page for more information.

- Getting Around
  - Schedules and Maps
  - Compass Card

Streetscape design guidelines

The streetscape design guidelines (SDG) describe design objectives for sidewalks, furniture, trees, and landscaping along all public streets in Vancouver.

The SDG contains an inventory and description of all approved streetscape design treatments.

The SDG is updated when we add and change special treatment areas.

1 of 7

Granville Mall sidewalk

Powered by Quietly

How to use the guidelines

Use the SDG map and list of special treatment areas below as a reference to design, build, and maintain high-quality streetscapes that:

- Meet Council-approved public realm plans
- Provide public amenities following our standards
- Help create vibrant neighbourhoods

Use the SDG alongside our Streets Restoration Manual (3.5 MB) and other required construction specifications and standards.

Contact us at streetscape@vancouver.ca to confirm the information in the SDG before you apply to build streetscapes.

Get approval for your streetscape designs from Engineering Services before starting to build, and have your work inspected during construction. We may ask you to meet additional or different requirements before approving your designs.

Area	Sidewalk and landscape guidelines	Street lighting guidelines	Pedestrian lighting guidelines	guidelines
Cambie Village	Commercial (110 KB)	Standard commercial davit (130 KB)		
Ceremonial Street	Commercial (190 KB) Residential (140 KB)	Standard commercial davit (130 KB)		
Chinatown	Commercial (150 KB)	Chinatown pole and fixture (140 KB)	Chinatown pole and fixture (140 KB)	
City Gate	Commercial (170 KB)	Standard commercial davit (130 KB)		
Coal Harbour	Commercial (110 KB) Residential (110 KB)	Standard commercial davit (130 KB)		
Commercial Drive	Commercial (100 KB)	Standard commercial davit (130 KB)		
Downtown South	Commercial (140 KB) Residential (140 KB)	Standard commercial davit (130 KB)	Inverted acorn fixture (130 KB)	
Fraser South Hill	General (100 KB)	Standard commercial davit (130 KB)		
Gastown	General (140 KB)	Gastown pole and fixture (140 KB)	Gastown pole and fixture (140 KB)	
Georgia Street West End	Commercial (210 KB) Residential (170 KB)	Standard commercial davit (130 KB)		
Granville Mall	General (120 KB)	Holophane Pechnia	Lumenarea Element EM20	

Area	Sidewalk and landscape guidelines	Street lighting guidelines	Pedestrian lighting guidelines	guidelines
Granville Slopes	Commercial (130 KB) Residential (130 KB)	Standard commercial davit (130 KB)		
Hastings Sunrise	Commercial (100 KB)	Standard commercial davit (130 KB)		
Knight Kingsway Neighbourhood Centre	Commercial (140 KB)	Roadway luminaire: K800-P2FL-II-200W PED luminaire: K700-P2FL-II-40W		
Library Square	Hamilton and Homer streets (130 KB) Robson Street (200 KB)	Standard commercial davit (130 KB)	Library Square pole and fixture (90 KB)	
Mount Pleasant	Commercial (170 KB)	Standard commercial davit (130 KB)		
Norquay Village	Commercial (140 KB)	Roadway luminaire: K800-P2FL-II-200W PED luminaire: K700-P2FL-II-40W	Roadway luminaire: K800-P2FL-II-200W PED luminaire: K700-P2FL-II-40W	
Olympic Village	Commercial (120 KB)	Olympic Village pole and fixture (700 KB)	Olympic Village pole and fixture (700 KB)	Bench (300 KB)
Pacific Boulevard	Commercial (140 KB)	Standard commercial davit (130 KB)		
Southeast False Creek	Commercial (120 KB) Lane (170 KB) Lane (shoreline treatment) (160 KB)	Southeast False Creek pole and fixture (700 KB)	Southeast False Creek pole and fixture (700 KB)	
Still Creek Watershed	General (90 KB)	Standard commercial davit (130 KB)		

Area	Sidewalk and landscape guidelines	Street lighting guidelines	Pedestrian lighting guidelines	guidelines
Triangle West	Non-terraced (140 KB) Terraced (220 KB)	Standard commercial davit (130 KB)		
VGH	General (160 KB)	Lumec Capella	Lumec Elliptical	
Yaletown	Historic loading docks (90 KB)	Domus series - Philips Lumec	Domus series - Philips Lumec	
All other City areas	Commercial (140 KB) Lane (180 KB) Residential (120 KB)	Standard commercial davit (130 KB) Standard residential davit (120 KB)		

Policies that inform the design guidelines

- Business improvement areas
- Central Area Plan (3.4 MB)
- CityPlan (10 MB)
- Downtown South Guidelines (2.6 MB)
- Greenest City Action Plan 2020
- Norquay Village Public Realm Plan (2 MB)
- Mount Pleasant Public Realm Plan (16 MB)
- Southeast False Creek Public Realm Plan (25 MB)
- Street Tree Guidelines (1.5 MB)
- Transportation 2040 Plan
- West Georgia Street Tree and Sidewalk Design Guidelines (792 MB)

Contact us about the SDG

streetscape@vancouver.ca

Time-limited and metered parking

Parking meter tips

- Parking meters are in effect from 9am to 10pm, 7 days a week, **including holidays**.
- Daytime rates (9am to 6pm) may be different from evening rates (6pm to 10pm).
- Before paying, check if there are parking restrictions in effect, such as rush hour, special events, or construction.
- Pay with the PayByPhone app and get text alerts when your session expires and extend it.

Parking time limits, metered parking, and other regulations help to:

- Ensure you can find on-street parking near destinations such as shops, services, and amenities
- Manage streets in industrial areas
- Serve residential visitors and service providers in denser neighbourhoods
- Minimize unnecessary searching for parking, congestion, traffic safety risks, and pollution

Our goal is to provide up to two available parking spaces per block in peak periods.

Time-limited parking

- Is typically 1 hour or 2 hours
- Gets shorter as demand for parking increases
- Is replaced with parking meters if time limits alone are not effective at managing parking

Parking meter rates

- Vary throughout the city
- Are set based on demand and may vary by time of day
- Are adjusted annually based on parking data collected in the previous year
- 5% tax is included in parking meter rates

Other street parking regulations

Loading and passenger zones

Find out about the rules on using a loading zone or passenger zone in Vancouver.

Accessible parking

Find accessible parking in Vancouver. Learn about parking exemptions for people with disabilities, and how to get a SPARC parking permit.

Car-sharing, carpooling and ride-sharing

Save the environment and make new friends. Find out how to join a carpool, car-share, or car co-op.

Motorcycles and scooters

Find motorcycle and scooter parking in Vancouver. Learn how much it costs to park your motorcycle and scooter.

Public parking lots

EasyPark is a City-owned, non-profit company that manages parking lots that are owned and leased by the City of Vancouver.

Find parking lots around Vancouver and in City parks on the EasyPark website .

Tools Used

- Building Motivation Over Time
- Financial Incentives and Disincentives
- Norm Appeals
- Obtaining a Commitment
- Overcoming Specific Barriers
- Work Programs that Influence the Home

Initiated By

- The Greater Vancouver Regional District's Employee Environmental Awareness Committee

Partners

- GVRD
- BC Transit
- Jack Bell Foundation (Vanpools)
- Better Environmentally Sound Transportation (BEST)

Results

- elimination of 42 Single Occupant Vehicle commuter trips per day, or 210 per week
- increase in Average Vehicle Ridership from 1.56 to 1.78
- 63,031 kg CO2 and 4,728 kg of smog and other ground-level contaminants reduced annually

Vancouver's Employee Trip Reduction Program

The Greater Vancouver Regional District's (GVRD's) Employee Trip Reduction Program took an integrated, multi-modal approach. By supporting the use of all modes of alternative transportation, a higher rate of employee buy-in could be obtained. This case study also shows how a municipality first developed a program for its own employees and then used it as a model for other employers. Even though GVRD has more resources to draw on than many other municipalities, the program's elements can be replicated by any community. This case study documents a program that took place between 1996 and 2002. A separate case study covers more current details on the public program that resulted.

Background

Launched May 1, 1996, the Employee Trip Reduction Program represented the GVRD's commitment to address transportation and air quality issues by promoting the reduction of single-occupant vehicle (SOV) commuter travel among its employees.

The Trip Reduction Program was initiated by the GVRD's Employee Environmental Awareness Committee. While the program was adopted as a corporate initiative supported by all of GVRD's departments, the Communications and Education Department and the Air Quality Department with assistance from BC Transit, were primarily responsible for implementation.

GVRD's offices were located in Burnaby, a highly urbanized municipality well-served by public transit. Burnaby was located within the Greater Vancouver Region, which had a population of 1.7 million people.

Setting Objectives

1. To shift the percentage of trips taken by each of the following commuting methods, from 1996 to 1998, as follows:

- single-occupant vehicle commuter travel from 57% to 40%;
- carpools from 15% to 20%;
- public transit from 19% to 30%;
- cycling stable at 3%;
- walking/jogging from 6% to 8%; and,
- telecommuting from 0% to 3%.

2. To increase the average vehicle ridership (AVR), the ratio of employees to vehicles arriving at a worksite each working day, from 1.56 to 2.0.

Getting Informed

As part of their background research, the GVRD relied on a two-year-old internal employee survey. The survey assessed existing travel patterns, measured modal splits (the percentage of employees using one form of transportation as opposed to another), and provided attitudinal data regarding the kinds of incentives people wanted.

A background literature search of previous employer trip reduction programs was conducted to uncover barriers to resource-efficient transportation, how they were overcome, and incentives used and their degree of success.

The key barriers identified were:

- public transit - took too much time;
- carpooling/vanpooling - needed car for personal reasons after work, or had an irregular work schedule (overcome by allowing flexibility in participation - for example the flexibility to use other commuting modes some of the time); and
- walking/cycling/jogging - lived too far away; lack of showers and lockers, poor bike storage (overcome by upgrading the facilities).

The key incentives used were:

- discounts on transit passes.

A baseline employee survey administered by the GVRD confirmed that these were important barriers for GVRD employees. The survey also measured AVR and modal splits. Most employees came to work in single-occupant vehicles; although many used public transit. Almost no-one telecommuted, and there was a lack of awareness about this commuting alternative. Most existing carpools had only two people per vehicle. By measuring commuting distances, it was determined that 46 per cent of employees lived within 10 and 25 km of their workplace, distances well suited to the use of public transit or carpooling. It was further determined that 28 per cent of employees lived within 10 km of their workplace, distances well suited to cycling, walking, or jogging to work.

Delivering the Program

For the first year, a full-time coordinator was allocated to the development and implementation of the Employee Trip Reduction Program. Considering the scale of this initiative, creating a full-time coordinator's position for the program's start-up was considered to be crucial to its success. The coordinator position was reduced to half time after the first year, and the responsibilities split over several employees.

A cornerstone of GVRD's strategy was the phasing out of a 60 per cent subsidy available for employee parking, removing an incentive to drive (Financial Incentives and Disincentives). Subsidies were phased out over a five-year period starting six months after the program began. The subsidy phase out, as well as administration of savings for other employee benefits, were negotiated as part of a new contract between GVRD management and the employees' union.

To register for the Trip Reduction Program, employees filled out a form indicating their willingness to use resource-efficient commuting alternatives to driving alone, at least one day per week (Obtaining a Commitment). The one day per week minimum provided participants with great flexibility, and a do-able first step that might lead to greater involvement (Building Motivation Over Time).

The program contained six initiatives:

1. *Carpool Ride-Matching Program*

A ride-matching program was implemented to connect people traveling from the same neighborhood or general area so they could commute in a single vehicle (Overcoming Specific Barriers). To find potential carpool partners, employees filled out ride-matching forms with such details as the nearest major intersection to home, usual work start and finish times, and their preference for being a driver, passenger, or both. An Employee Transportation Coordinator provided information about the program and processed the forms.

A two-month trial period was offered during which employees were not required to give up their parking spots, for which there was a waiting list of up to five years (Overcoming Specific Barriers , Obtaining a Commitment). During this time they were reimbursed for their monthly parking payroll deductions.

A corporate carpooling fleet was made available - at a charge of 26 cents per kilometer to recover 100 per cent of the cost of insurance, parking, gas and maintenance - to carpool groups that did not have access to a vehicle (Overcoming Specific Barriers). Employees were required to sign an agreement to use the cars strictly for commuting purposes.

When subsidies for employee parking were phased out, incentives were added to encourage carpooling (Financial Incentives and Disincentives). Carpool groups consisting of two employees could claim a 50 per cent reimbursement of parking

payroll deductions. Groups of three or more could claim a 100 per cent reimbursement.

2. *Vanpool Empty Seat Insurance*

While all Vancouver commuters had access to a vanpool service operated by the Jack Bell Foundation, vanpools were sometimes forced to disband when a member dropped out, because a replacement could not be immediately found, which consequently increased the cost per person. The GVRD therefore offered Empty Seat Insurance to cover the cost of one empty seat for a period of up to two months per year (Overcoming Specific Barriers). The two-month period was considered a reasonable time frame in which to find a replacement.

3. *Cycling Safety Workshops and Worksite Facility Upgrades*

Safety workshops were organized for employees who were prepared to cycle to work but were unsure about the best travel routes, or were concerned about traffic safety. Cycling coaches provided through an externally run group called Better Environmentally Sound Transportation (BEST) mapped out individualized routes and accompanied participants on a trial run. Free bicycle maintenance workshops were also provided (Overcoming Specific Barriers).

Improvements were also made to shower facilities at work sites, and more bicycle racks were installed (Overcoming Specific Barriers). To increase visibility, one of the racks was placed at the building's front entrance (Norm Appeals). In addition, a cage for up to 50 bicycles was provided in an underground parking lot, replacing some existing car parking spots.

4. *Guaranteed Ride Home Service*

A Guaranteed Ride Home Service was provided free-of-charge to ensure that individuals enrolled in the Employee Trip Reduction Program were not left stranded at the office in cases of emergency, unscheduled overtime, or missed rides (*Overcoming Specific Barriers*.)

The service was available to program participants, up to a maximum of four times per year, on days when they didn't drive alone. A department receptionist would either arrange for use of a corporate car, or would call a taxi and issue a voucher.

5. *Flextime*

As long as it did not interfere with a department's operational requirements, participants could change the times they started and ended work by up to one-half hour, to create a work schedule that accommodated commuting via carpooling, public transit, cycling, walking, or jogging (Overcoming Specific Barriers).

6. *Subsidized Transit Program*

BC Transit representatives held workshops at GVRD work sites. Participants received information about the most direct commuting routes, visually demonstrated using computers. Estimated travel times were also calculated. Each participant then received a personalized printout of the results (Vivid, Personalized Communication).

To encourage use of public transit for local business travel, transit tickets were available free-of-charge from each department. Employees could also purchase monthly transit passes through payroll deduction and receive a 15 per cent discount (Financial Incentives and Disincentivess). To receive the discount, employees were required to sign a contract with BC Transit agreeing to purchase the monthly transit passes for a period of 12 consecutive months (Obtaining a Commitment). GVRD also promoted the use of public transit for local business activity by issuing free transit tickets to each department.

Promotion

Electronic mail and posters were the main means of promoting the six initiatives. Messages linked commuting choices with air quality and traffic congestion "hot issues in the community" as well as to other common motivators like saving money and time, and avoiding stress (Building Motivation Over Time).

Information about the program could also be obtained by calling a hot-line staffed by an Employee Transportation Coordinator, or by visiting one of three staffed Commuter Information Centers (Vivid, Personalized Communication). The centers contained public transit maps and schedules, public transit pass applications, a

cycling commuter map, a bulletin board with transportation related information, and up-to-date information on existing carpools.

To strengthen the motivation of participants, and to encourage non-participating staff to "join in", steps were taken to increase the visibility of participation by others (Norm Appeals). For example, a monthly employee newsletter included photographs of individuals using the promoted commuting practices. Designated carpool parking spots were clearly marked for all to see. In addition, prizes were given for participation in monthly Clean Air Days. Ballot boxes were located at receptionists' desks - highly visible locations. Additional communications encouraged employees to engage in other "clean air activities" such as planting trees, using a push lawn mower instead of a gas-powered one, and minimizing SOV use for non-commuting purposes.

Regional Trip Reduction Service

To help bring transportation alternatives to workplaces throughout the Greater Vancouver Area, the GVRD contracted out for the development of a program called Go Green Choices. When the Greater Vancouver Transportation Authority, also known as TransLink, was created in 1998, they took on responsibility for the Trip Reduction Program and the Employer Pass Program. The Trip Reduction Program included Go Green Choices and the Jack Bell Foundation rideshare programs.

The Go Green Choices program offered these services:

- distributing a brochure ("It's Your Business: Commuting Alternatives for your Workplace") to help in "selling" participation to key decision makers at each workplace;
- training a designated employee at each workplace as a Go Green Coordinator, to create and manage the trip reduction program at the workplace;
- providing a Go Green Coordinator's Kit, including a guide with step-by-step instructions and checklists; templates for e-mails, memos, and employee transportation surveys; and a brochure, poster and postcard for use with employees;
- promoting the Jack Bell Foundation rideshare program; and,
- offering free on-going assistance.

The Go Green Choices program was positioned to employers as a service that would improve their workplace and their profit-margins. The following links were made to common employer-related motivators (Building Motivation Over Time):

- monetary savings through parking management;
- lower demand for office space through the introduction of telecommuting programs;
- a healthier more productive workforce, with reduced absenteeism, due to more employees cycling, running, or walking to work; and,
- a competitive advantage resulting from a higher public profile and boosted employee morale.

Barriers to Implementation

The most significant barriers or challenges to program implementation were:

- getting all of management on-side;
- obtaining funding for program start-up;
- educating employees about the value of having a corporate trip reduction program;
- structuring a payroll deduction system for the transit pass purchases; and,
- negotiating changes to unionized employees' contract regarding parking subsidy benefits.

Financing the Program

N/A

Measuring Achievements

A survey was conducted amongst GVRD employees one year after the Employee Trip Reduction Program was initiated, to determine whether the program was achieving its objectives. Additional surveys were conducted as required. An ongoing monitoring system for participation was also used, with the information collected from enrolment forms inputted into a database.

Feedback

N/A

Results

- elimination of 42 SOV commuter trips per day, or 210 per week; and,
- an increase in AVR from 1.56 to 1.78 (target was 2.0).

The percentage of trips taken by each of the following commuting methods shifted, from 1996 to 1997, as follows:

- SOV commuter travel from 57% to 46% (1998 target was 40%);
- carpooling from 15% to 21% (1998 target was 20%);
- public transit from 19% to 22% (1998 target was 30%);
- cycling from 3% to 5% (1998 target was 3%);
- walking/jogging stable at 6% (1998 target was 8%); and,
- telecommuting stable at 0% (1998 target was 3%.)

Overall participation in the program steadily increased from 177 employees in 1996, to 213 in 1999. Of these 213 participants, 10 walked, 96 took transit, 13 cycled and 92 carpooled.

Annual estimated greenhouse gas reductions were:

- 63,031 kg CO2 (equivalent to the effect of planting 1,300 to 1,400 trees) and
- 4,728 kg of smog and other ground-level contaminants.

Contacts

This case study documents a program that took place between 1996 and 2002. A separate case study covers more current details on the public program that resulted.

Notes

UPDATE as of December 2002:

A full-time coordinator was responsible for promoting and delivering the Trip Reduction Program in its first year and was found to be critical to the programs success. Later the coordinator worked part-time, sharing some of the duties with other staff. The program continued to be promoted to staff using different approaches including:

- The celebration of Clean Air Day the first Wednesday of every month to encourage staff to try alternative transportation at least once a month Participation in the National Clean Air Day in June
- E-mail messages are sent to staff, including program information (i.e. events) and ballot winners (employees are encourage to submit ballots to win monthly prizes
- When the program was first launched, an information booklet was designed for distribution to new staff. Although a good tool, the booklet had not been updated so was no longer distributed.

The success of the program resulted in the development of the Go Green Choices program (delivered by B.E.S.T.), which was delivered to other companies and organizations in the GVRD.

Lessons Learned

There were several factors influencing the success of this program, as follows:

- A full-time coordinator to initiate the first year of the program
- Phasing out 60% of the employee parking subsidy
- Designing a flexible program that met the needs of different types of lifestyles/people
- Written approval received from all those wanting to participate in the program
- Using a portion of parking revenues to fund part of the program
- The "dynamics" of the carpool group is crucial to program success but be careful to match up compatible carpoolers
- The Transit Pass Initiative that was originally devised as a monthly pay deduction approach covering the cost of a transit pass (at a 15% discount). However, this was changed to a yearly pay deduction approach after discovering the high administration requirements associated with the monthly deduction system. This has resulted in a more cost effective and easier administration system for the Go Green coordinators but has proven less flexible for the employee.
- Some employees were not satisfied with the yearly transit pass because it is inflexible. A six-month pass purchase program might be more useful to employees who chose to cycle or integrate other non-motorized forms of commuting parts of the year.

UPDATE as of December 2007:

Since 2002, the program was called Metro Vancouver's OnBoard Program.

The program promoted a variety of commuting options initiatives:

1. Employer Pass Program. This discounted annual transit pass gave employees a 15% discount on their transit pass when 25 or more employees from the same company participated. Payment for the pass was facilitated through payroll deduction by the employer. The pass was valid for travel throughout the year, and pass holders could take up to five family members (1 adult and 4 children) on transit on Sundays and statutory holidays at no extra charge. Employers often choose to provide an additional subsidy. By providing heavily discounted transit passes, employers were able to attract new hires in this competitive labor market. At the same time they demonstrated their commitment to corporate environmental responsibility.

2. Ridesharing. Jack Bell Ride-Share is a not-for-profit organization which hosts an online ride-matching database that helps people find casual ridesharing partners and formal car and vanpool groups. TransLink, through the OnBoard program, provided ongoing funding support to Jack Bell Ride-Share. It also supported the annual Ride-Share week.

3. Corporate Car Share. TransLink, in partnership with the Cooperative Auto Network, created a corporate car share program called The Company Car. The Company Car provided businesses with access to corporate vehicles for employees. The Company Car helped companies save money on their fleet vehicles, and helped employees save money for gas and parking costs.

4. Active Transportation. The OnBoard program promoted cycling and walking to work through cycling workshops and region-wide events such as Bike to Work Week, Commuter Challenge and Ride-Share Week. TransLink also consulted with employers to create facilities such as bike cages and showers to facilitate more cycling and walking. It also sponsored Bike To work Week, Bike Month and Ride-Share Week.

5. Parking Management. TransLink encouragedemployers to implement parking management strategies to complement their trip reduction initiatives. Converting free parking to pay parking, creating preferential parking for ridesharing vehicles, and equitable transportation allowances are all examples of parking management strategies.

6. Guaranteed Ride Home. Guaranteed or Emergency ride home was a policy which ensured that employees who commuted using alternative transportation could get home in event of emergency, or when their shared ride was not available.

7. Teleworking. Working from home (1 to 3 days a week) meant that employees did not have to commute. Telework benefited employers, employees, and the environment. It had been shown to increase employee productivity and reduce absenteeism.

8. Park and Ride. There were 20 park and ride sites in Metro Vancouver, all of which connected with transit (either at a major bus loop or at a SkyTrain station).

Promotion

TransLink promoted and marketed the OnBoard program through a variety of communications. An information package was sent to specific targeted employers. This was followed up with a phone call and request for an interview. Presentations were made to employers, and often to employees at lunch and learn sessions. A number of marketing initiatives were employed using different media. These included advertising in business papers and magazines, local newspapers, advertising with Captivate television screens in building elevators, Lightvision screens (large billboards on highways), direct e-blasts to employers, ads on parking arms in parking lots, on-line advertising with agencies such as CBC, Telus.com, Google.com, banners in SkyTrain stations. GVRD also hosted transportation fairs in areas such as business and office parks. These initiatives reached a number of employers who then contacted the OnBoard program for assistance in implementing programs at their worksites.

Results

Since the launch of the program, OnBoard had helped more than 300 companies in the GVRD to develop and implement trip reduction programs.

Conclusion

The OnBoard program was very successful in working with employers to offer commuting alternatives for employees. The employer pass program had seen an increase from 108 to 240 in participating companies since the launch of the OnBoard program. The number of participating employees had also risen since, from 6,000 to over 14,000 participants. In 2006 alone the employer pass program helped eliminate 700,000 single occupancy vehicle trips from the region's roads.

Ridesharing also experienced increasing success. Since the launch of the OnBoard program, Jack Bell Ride-Share, which can be viewed at www.ride-share.com, had eliminated more than 1,000,000 single occupancy vehicle trips in Metro Vancouver.

The OnBoard program helped provide commuting options at a lower cost. It reduced commuting hassles and stress, promoted commuting choices that enhanced the quality of life, and helped employers attract and retain good employees. It also reduced congestion on the region's roads, as well as GHG emissions.

Resources

- Sample of Posters for Bike Workshops
- Clean Air Day Participation Ballots
- Employee Trip Reduction Program Introduction Document

Last updated: December 2007

TransLink Tomorrow

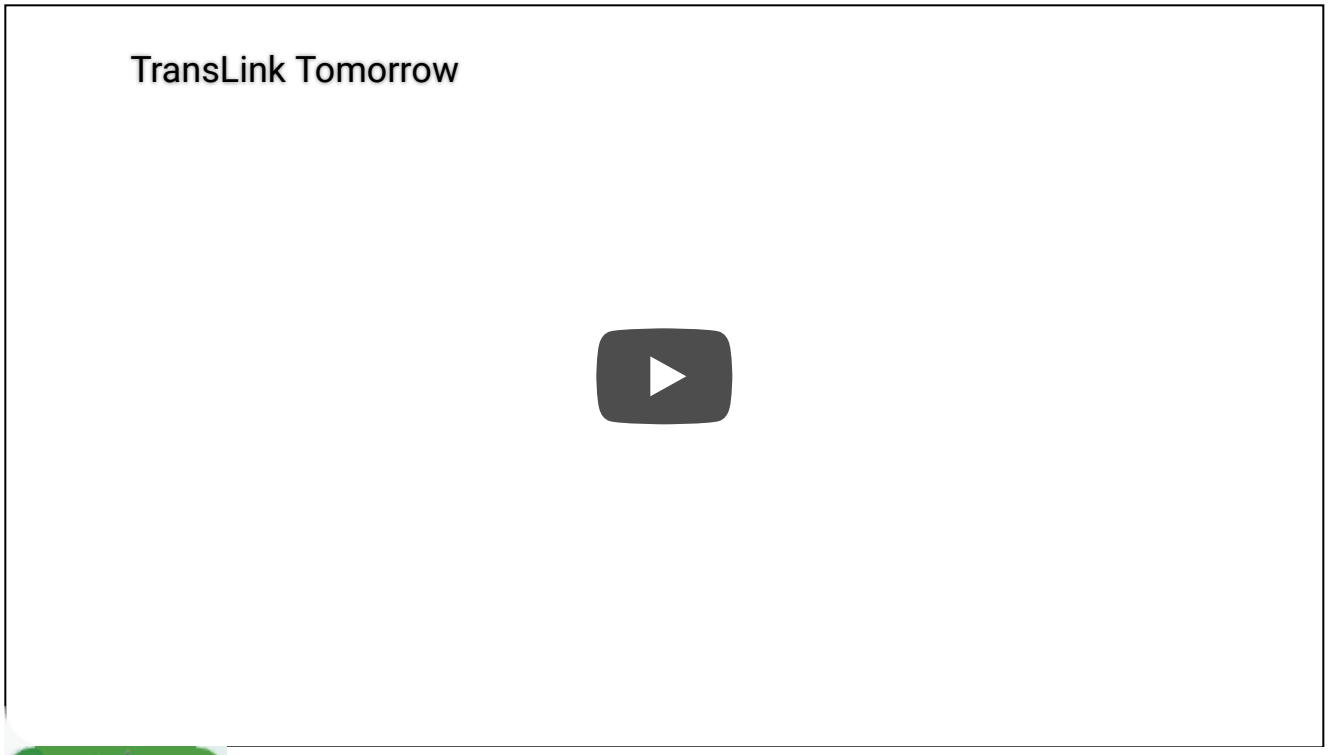
Solutions for a better transportation future

TransLink Tomorrow is our commitment to continuously explore, test, and implement innovative ways to improve mobility in Metro Vancouver.

It is also our commitment to a more open and nimble approach to collaborating with industry, entrepreneurs, and academia. Working together, we can more quickly surface worthwhile new ideas and technologies that:

- Enable seamless and efficient door-to-door mobility for people and goods
- Promote safe, healthy, clean, and compact communities
- Ensure affordable and equitable access for all

From battery electric buses to accessible fare-gates to on-demand micro-transit, TransLink is always looking for new and better and more cost-effective ways to keep the region moving forward.



Plans and Strategies

See our strategy documents, policies, and guidelines related to New Mobility.

Learn more...

Open Call for Innovation

Open innovation calls look for innovative ideas to improve mobility.

Find out more...

New Mobility Lab

A place for researchers offering collaboration and funding for applied research.

Learn more...

Pilot and Demonstration Projects

We are testing new ideas to improve mobility in the region.

See our projects...

Meetings and Events

Check here for news on upcoming TransLink Tomorrow events.

More details...

Transit On-Demand Pilot Program

We are testing on-demand service on Bowen Island.

Find out more...

TransLink eNewsletter

Stay up-to-date on projects, transit service changes and other initiatives.

- Getting Around
  - Schedules and Maps
  - Compass Card
  - Rider Info
  - Driving
  - Cycling
  - Accessible Transit
- Traveller Info
  - Trip Planner
  - Next Bus
  - Alerts
  - Subscribe to Alerts

- Google Transit
- Mobile Site

- About Us
  - Who We Are
  - Do Business With Us
  - Careers
  - Media
  - Operating Companies
  - Developer Resources
- Help
  - Contact Us
  - Golden Ears Bridge
  - Lost and Found
  - Website Accessibility
  - Customer Service Charter
  - Site Map
- Stay Connected
  - Facebook
  - Twitter
  - YouTube
  - Buzzer Blog
  - Events Calendar
  - RSS Feeds
  - TransLink Listens Panel
  - Send Feedback
  - 604.953.3333
  - Live Chat

- Coast Mountain Bus Company
- bcrtc An Integrated Rapid Transit Company
- WEST COAST EXPRESS
- Transit Police

- Terms & Conditions
- Privacy
- Website Accessibility
- Site Map
- Careers
- Customer Service

TravelSmart

TravelSmart is TransLink's Transportation Demand Management (TDM) Program that allows us to connect with customers on a personal level through a unique combination of face to face outreach, tools, resources, and strategic partnerships. By highlighting travel solutions that work within an individual's lifestyle, TravelSmart aims to change the way that Metro Vancouverites view transportation and how they utilize it in their daily lives.

Whether your main mode of travel is walking, cycling, transit, or driving there are ways to reduce your costs, your impact on the environment, and your health by the transportation choices you make every day.

The TravelSmart team works in synergy with our planning and infrastructure projects to ensure that customers know about new and existing services and how they can utilize them. Specifically, through community/non-profit entities, seniors, newcomers, businesses, and school groups to ensure that residents and visitors to Metro Vancouver understand the sustainable transportation options available for their lifestyle.

Accessible Version

Related Pages

- Transit 101
- Bikes on Transit
- Carsharing
- Carpooling
- Park and Ride
- Community Sponsorship and Partnership
- Group Travel

Upcoming Events

- August 10 2019
  Kaleidoscope Arts Festival
- August 17 2019
  PNE
- August 17 2019
  Shipped North Van
- See more events...

- Programs
- Partnerships

The TravelSmart team works with a variety of groups to promote smarter travel options.

- Business
- Newcomers
- Schools
- Seniors

TravelSmart for Business

Is your organization a strong supporter of sustainability? Are you challenged by the demand for parking or are you looking to relocate? Is your location hindering your ability to hire the best and brightest?

Transportation continues to be one of the biggest challenges facing businesses in our region today. Traffic congestion delays your employees getting to work, and goods getting to their destination.

A TravelSmart advisor can provide your organization with an expert-level, strategic approach to employee commuting, and transportation issues.

Contact us if you'd like to discuss working together to help your organization meet your goals.

How can your business benefit?

What is included?

How do your employees benefit?

Resources

Compass for Organizations

Compass for Organizations is a transit program the helps get your employees where they want to go - including work - safely, reliably, and affordably. All thanks to you.

How does it work?

- Compass Cards for your employees can be loaded with an adult or concession Monthly Pass or a West Coast Express Monthly Pass.
- You choose how much to contribute — from 10% to 100% of the fare.
- You choose the duration from one month, to well, forever.

Enroll today by contacting us by email at travelsmart@translink.ca.

TravelSmart for Newcomers

Metro Vancouver attracts and welcomes thousands of new residents and millions of tourists each year. With the population of Metro Vancouver predicted to grow by 1 million people by 2040, the region receives over 20,000 new residents annually. Transportation is key to newcomers settling into their new home successfully.

Working with individual newcomers, settlement service agencies, and community groups and facilities throughout the region, we provide newcomers with tools, resources, and tips on how to effectively use public transit and other modes of sustainable transportation.

We provide:

- Online tools workshop (trip planning, how to use Compass etc.)
- Safety, security, and etiquette tips
- Take away resources, materials, and incentives

Addressing language barriers

We understand many of our new residents have difficulties with English. That's why we work with Settlement Services Providers and other community partners to offer resources in other languages:

- Working with interpreters provided by partnering agencies, provide travel training seminar in other languages
- Offer take away resources and materials in other languages

Settlement Services Providers

TransLink offers frontline Settlement Services Workers with the transportation information they need to help newcomers settle. We provide Train the Trainer sessions for staff and volunteers to support them with the tools and information they need to assist newcomers.

TravelSmart for Schools

TransLink's TravelSmart for Schools programs engage students to look at where they walk, cycle, and use other modes of sustainable transportation in their lives. Our 60-minute workshops highlight the many benefits of safe and active modes of travel (health, environmental, and financial benefits), and empower students to become confident and independent travel ambassadors within their schools, families, and communities.

What do students learn?

What does the TravelSmart for Schools program include?

TravelSmart Program requirements

How to book a TravelSmart Program

Resources

TravelSmart for Seniors

By 2025, 1 in 4 Canadians will be over 60 years of age. Seniors are living longer and are more active than ever before.

Working with Senior Centers and advocacy groups throughout the region, we provide seniors with information on the wide array of transportation options available.

We provide:

- Sustainable transportation overview
- Travel training seminars
- Online tools workshop
- Safety, security, and etiquette tips
- Take away resources, materials, and incentives
- Train the Trainers sessions for staff and volunteers

The TravelSmart team works with a variety of corporate and government partners to ensure that Metro Vancouverites are aware of smarter travel options. Whether you're planning a community event, providing services to new British Columbians, or concerned with getting your employees to and from work — we can help!

TravelSmart works with the following service partners to deliver our programs throughout the region.

- HUB: Your Cycling Connection
- HASTe: Hub for Active School Travel
- Climate Smart
- Dream Rider Productions
- BCSEA Climate Change Showdown
- BEST Bike Valet
- PEDAL
- BC Cycling Coalition
- Zipcar
- Modo
- EVO
- Car2Go
- Spare Rides

Municipalities: We work with local Metro Vancouver governments to implement transportation demand management programs tailored to each community.

Community and Non-Profit Organizations: TravelSmart has formed partnerships with organizations and community groups to promote demand management initiatives through events, businesses and campaigns. Some of these include the Vancouver Marathon, Children's & Women's Health Centre of BC, Vancouver Art Gallery, BC Lions & the Grey Cup Festival, FIFA Women's World Cup, Car Free Days, Bar Watch, Tourism Vancouver, Vancouver Coastal Health, the 2010 Vancouver Olympic Games, ICBC, Downtown Vancouver Business Improvement Association, and many more!

Partnership Inquiries

If you're interested in a partnership or business relationship with TravelSmart, complete the community sponsorship form and we'll review and respond to your submission.

Contact Us

If your group (company, school or organization) would like to talk about how you can reduce single occupant vehicle use and promote sustainable transportation options, contact us at travelsmart@translink.ca.

- Getting Around
  - Schedules and Maps
  - Compass Card
  - Rider Info
  - Driving
  - Cycling
  - Accessible Transit
- Traveller Info
  - Trip Planner
  - Next Bus
  - Alerts
  - Subscribe to Alerts
  - Google Transit

- Mobile Site
- About Us
  - Who We Are
  - Do Business With Us
  - Careers
  - Media
  - Operating Companies
  - Developer Resources
- Help
  - Contact Us
  - Golden Ears Bridge
  - Lost and Found
  - Website Accessibility
  - Customer Service Charter
  - Site Map
- Stay Connected
  - Facebook
  - Twitter
  - YouTube
  - Buzzer Blog
  - Events Calendar
  - RSS Feeds
  - TransLink Listens Panel
  - Send Feedback
  - 604.953.3333
  - Live Chat
- Coast Mountain Bus Company
- bcrtc An Integrated Rapid Transit Company
- WEST COAST EXPRESS
- Transit Police

- Terms & Conditions
- Privacy
- Website Accessibility
- Site Map
- Careers
- Customer Service

Walk + Bike + Roll: School Active Travel Planning

The School Active Travel Planning program encourages and promotes walking and cycling to school.

We consult with school communities and other stakeholders to identify school transportation challenges and opportunities. Our focus is to:

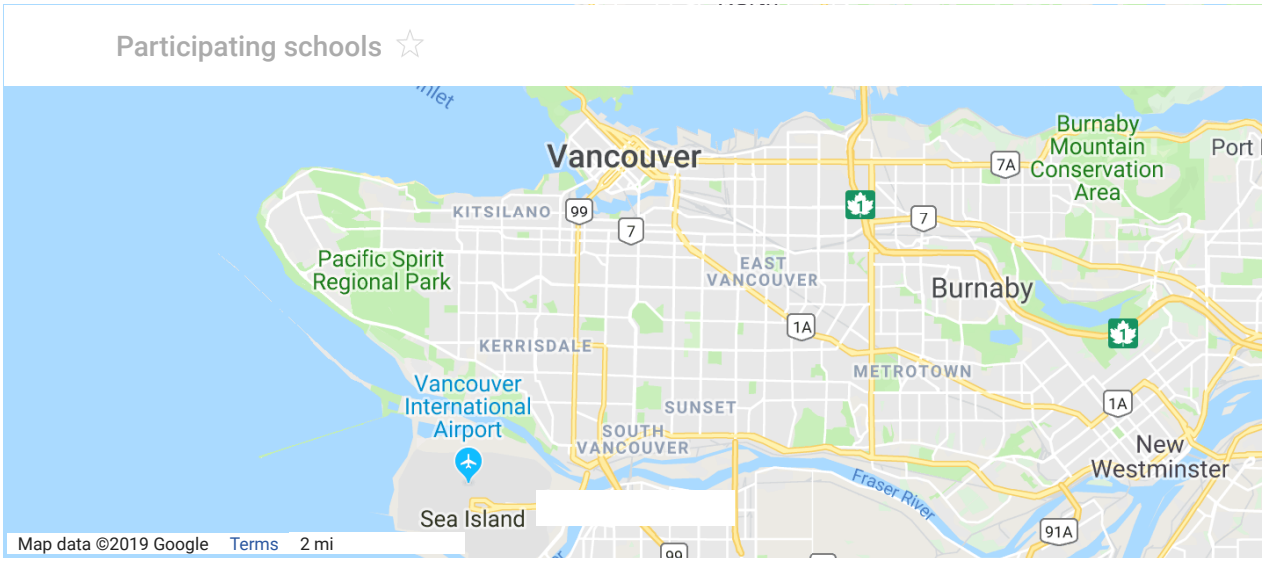
- Improve walking and cycling infrastructure around schools
- Increase education and awareness around active transportation

The program is a partnership between the City of Vancouver and Vancouver School Board, and is a direct outcome of our Transportation 2040 Plan.

Program benefits

School Active Travel Planning has many benefits for students, the community, and the environment, including:

- Increasing physical activity among students, leading to healthier, happier, and more alert learners
- Creating opportunities to engage with neighbours and socialize on the way to school
- Reducing car travel to school, in turn decreasing traffic congestion, greenhouse gas emissions, and air pollution
- Inspiring active travel habits early in life to carry into adulthood



Action plans and route maps

Find action plans and best walking and cycling route maps for schools that have participated in the School Active Travel Planning program.

-
- Year 2018 - 2019

Simon Fraser Elementary

- Action Plan - in progress
- Route Map - in progress
- Report - in progress

Sir John Franklin Elementary

- Action Plan - in progress
- Route Map - in progress
- Report - in progress

Tecumseh Elementary

- Action Plan - in progress
- Route Map - in progress
- Report - in progress

Tecumseh Annex School

- Action Plan - in progress
- Route Map - in progress
- Report - in progress

Admiral Seymour Elementary

- Action Plan - in progress
- Route Map - in progress
- Report - in progress

Tillicum Annex School

- Action Plan - in progress
- Route Map - in progress
- Report - in progress

- Year 2017 - 2018

Florence Nightingale Elementary

- Action Plan (418 KB)
- Route Map (748 KB)
- Report (2.5 MB)

Mount Pleasant Elementary

- Action Plan (420 KB)
- Route Map (1.1 MB)
- Report (4.6 MB)

Renfrew Elementary

- Action Plan (416 KB)
- Route Map (815 KB)
- Report (2.9 MB)

Thunderbird Elementary

- Action Plan (415 KB)
- Route Map (638 KB)
- Report (2.5 MB)

- Year 2015 - 2016

Captain James Cook Elementary

- Action plan (53 KB)
- Route map (965 KB)
- Report summary (595 KB)

Lord Selkirk Elementary

- Action plan (106 KB)
- Route map (919 KB)
- Report summary (585 KB)

Lord Roberts Elementary

- Action plan (58 KB)
- Route map (1 MB)
- Report summary (320 KB)

Pierre Elliot Trudeau Elementary

- Action plan (XX KB)
- Route map (1.3 MB)
- Report summary (576 KB)

- Year 2014 - 2015

Laura Secord Elementary

- Action plan (64 KB)
- Route map (3.3 MB)
- Report summary (505 KB)

David Oppenheimer Elementary

- Action plan (47 KB)
- Route map coming soon
- Report summary (485 KB)

Kerrisdale and Kerrisdale Annex Elementary

- Action plan (56 KB)
- Route map (1.7 MB)
- Report summary (581 KB)

Southlands Elementary

- Action plan (112 KB)
- Route map coming soon
- Report summary (490 KB)

Queen Mary Elementary

- Action plan (153 KB)
- Route map (1.6 MB)
- Report summary (766 KB)

- Year 2013 - 2014

Carnarvon Community Elementary

- Action plan (41 KB)
- Route map (744 KB)
- Report summary (599 KB)

Sir Charles Kingsford-Smith Elementary

- Action plan (32 KB)
- Route map (578 KB)
- Report summary (643 KB)

Sir Sandford Fleming Elementary

- Action plan (33 KB)
- Route map (661 KB)
- Report summary (XXX KB)

John Norquay Elementary

- Action plan (35 KB)
- Route map (740 KB)
- Report summary (632 KB)

Grandview Elementary

- Action plan (34 KB)
- Route map (680 KB)
- Report summary (849 KB)

- Year 2012 - 2013

Lord Kitchener Elementary

- Action plan (36 KB)
- Route map (666 KB)
- Report summary (659 KB)

Hastings Elementary

- Action plan (34 KB)
- Route map (706 KB)
- Report summary (604 KB)

Dr. George M. Weir Elementary

- Action plan (38 KB)
- Route map (630 KB)
- Report summary (867 KB)

Sir Wilfrid Laurier Elementary

- Action plan (39 KB)
- Route map (1.9 MB)
- Report summary (591 KB)

Eric Hamber Secondary

- Action plan (33 KB)
- Route map (3 MB)
- Report summary (488 KB)

L'Ecole Bilingue Elementary

- Action plan (40 KB)
- Route map (1 MB)
- Report summary (609 KB)

14 items

How we help overcome school travel challenges

See how we improve infrastructure and support activities to encourage active travel.

2

Powered by Quietly

Self-starter toolkit

Participate in educational and awareness initiatives hosted by your school or start your own. Fun programs and events include:

- Bike or walk-to-school week
- Walking school bus
- Cycling education
- Safety talks

Download helpful posters:

Questions about our program?

Interested in having your school considered for safety improvements? Please contact us at:

schoolactivetravel@vancouver.ca

Find ideas and programs to start your own active travel program in your school community:

- Back to school info sheet 2018 (217 KB)
- Active travel school benefits (63 KB)
- Active & Safe Routes to School
- International Walk to School (iwalk)
- Walking school bus
- HUB Cycling
- HASTe

Grandma On The Move

Grandma on the Move, features Will Stroet and Charlotte Diamond, with an aim to inspire safe, courteous, and mindful road behaviour.

SCI Directors and Staff

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